International Library of Technology

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A SERIES OF TEXTBOOKS FOR PERSONS ENGAGED IN ENGINEERING PROFESSIONS, TRADES, AND VOCATIONAL OCCUPATIONS OR FOR THOSE WHO DESIRE INFORMATION CONCERNING THEM. FULLY ILLUSTRATED

COST ACCOUNTING
INSOLVENT AND DECEDENTS' ESTATES
ANALYSIS OF ACCOUNTS
ELEMENTS OF COST ACCOUNTING

SCRANTON
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The parts of this volume included under the title "Cost Accounting" were prepared by J. Lee Nicholson, C. P. A., President of the J. Lee Nicholson Company, Certified Public Accountants, New York, and President of the American Cost Accounting Company, Factory Cost Specialists, New York.

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PREFACE

The volumes of the International Library of Technology are made up of Instruction Papers, or Sections, comprising the various courses of instruction for students of the International Correspondence Schools. The original manuscripts are prepared by persons thoroughly qualified both technically and by experience to write with authority, and in many cases they are regularly employed elsewhere in practical work as experts. The manuscripts are then carefully edited to make them suitable for correspondence instruction. The Instruction Papers are written clearly and in the simplest language possible, so as to make them readily understood by all students. Necessary technical expressions are clearly explained when introduced.

The great majority of our students wish to prepare themselves for advancement in their vocations or to qualify for more congenial occupations. Usually they are employed and able to devote only a few hours a day to study. Therefore every effort must be made to give them practical and accurate information in clear and concise form and to make this information include all of the essentials but none of the non-essentials. To make the text clear, illustrations are used freely. These illustrations are especially made by our own Illustrating Department in order to adapt them fully to the requirements of the text.

In the table of contents that immediately follows are given the titles of the Sections included in this volume, and under each title are listed the main topics discussed. At the end of the volume will be found a complete index, so that any subject treated can be quickly found.

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COST ACCOUNTING
(PART 1)

GENERAL DISCUSSION

ESSENTIALS OF A COST SYSTEM

ORGANIZATION

1. Order is the first law of the universe. It needs no argument to prove that organization is to be preferred to chaos, and that system is far superior to a lack of it; yet many manufacturers do not fully realize how great might be the increase in the efficiency of their plant did they but possess a system of organization and management, which tends to provide the factory manager with complete information, so as to throw the searchlight on all the weak points in the problems of production. To discover all leaks in the course of manufacture and to indicate where the necessity for economy exists, system is absolutely necessary.

It is now a recognized fact that great economy can be effected by the introduction of rational and efficient factory systems that will properly care for the highly important detail of factory work. Under ordinary systems it is impossible for men to come in close contact with all the amount of detail incident to any large business to enable them to possess that knowledge of factory efficiency which is so necessary to obtain the best results. In many cases the time of the manager and the superintendent is so taken up with detail work in order to secure this result that

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it prevents them from giving the proper attention to the problems for which their education, experience, and ability fit them.

The expense of a modern system need not be materially greater than that of an antiquated, crude, and inefficient way of keeping records. It is the worst sort of business extravagance to estimate, even where such estimate at the time is approximately correct, only to find at the end of the year that conditions had changed since this estimate was made and goods ignorantly sold below cost.

COST KEEPING AND COST FINDING

2. The science of accounting is generally understood to deal with the financial transactions; it considers the elements of costs as proportions of percentages of the known total, and recognizes the product only in its relation to money value.

The science of cost finding, on the other hand, deals with product as accumulated units of production, considers the elements of costs in their relation to the product, and determines the cost per unit by comparing the sum of the elements of costs with the volume of units produced. Accounting takes a total and determines the proportions of its elements; cost finding begins with the elements and determines the total.

3. Cost keeping is a subject of such fundamental importance that to solve its problems a man must bring to them an absolutely unbiased mind and a determination to analyze the situation so thoroughly as to form an accurate judgment. Factory cost accounting should be devised in such a manner as not only to show the cost of the final product, but also to give unerring information of the exact working conditions and efficiency of all operating departments.

When cost of production and operating is accurately known, it should be properly tabulated so that it may be compared with previous and subsequent costs. In this manner any variations in the costs of manufacture are immediately determined and any economy that may be necessary is at once brought to the attention of the executive. Thus, he is enabled

to acquaint himself with all the details of the factory, to be fully conversant with the labor and material cost, and to know from day to day the results and conditions of his business.

Therefore, it might be said that **cost accounting** is a system of accounting that deals with the recording in detail of the transactions arising from, and having to do with, the manufacture of the product and the summarizing of these details in such a manner as to be controlled by the financial books. This definition covers what might be termed a *complete cost system.*

To be fully effective, the cost records must be a part of the general system of accounting. They must "match up" with the general books. Independent of this, the cost accounts may supply data of considerable importance, but they cannot be so far-reaching, so fully effective, and of so much value to the factory management as they could and should be.

4. Cost accounting is not, however, a standard system that can be applied to any manufacturing business, nor can the business be changed to conform to the system. On the contrary, the system must be adapted to the particular line of business under review.

It is not practical to borrow a system, so to speak, from some other plant, even in the same line of business, as it is not likely that a ready-made system will apply to two different concerns manufacturing the same articles, owing to the fact that the business is conducted differently. The individuality of every man is shown by the manner in which he conducts his business. This is why conditions are materially different in two factories of the same kind.

There is another element that should be considered, and that is the changes in conditions of manufacturing, and the product manufactured. In many instances systems in use are impractical and entirely inadequate owing to new conditions of manufacture. It frequently happens that one particular article or line of product will be manufactured where all the processes are the same, and then later the business will be changed to the extent that new articles will be added, necessitating different

methods of operating and in certain cases different equipment, all of which alter the entire conditions of manufacturing.

Consequently, under these circumstances, a system that was apparently suitable to the former conditions is entirely impractical under the changed conditions; and yet in most cases the same system is used, whereas it should be changed materially in order to obtain accurate results. It must be borne in mind that every manufacturer has a system of cost, not always, perhaps, what the expert would call a cost system. Nevertheless, some method of either estimating or finding cost is used in every plant. No manufacturer would attempt to do business unless he had some idea of what his goods were costing him, and while his figures may be unreliable and only estimates at best, still he must use some method of some character, and, when these data are examined by the expert who goes to the plant for the purpose of devising a new system or improving the old system, the expert must have a fair and definite knowledge of the operation and conditions in order to understand the data when examined.

Ingenuity and good judgment are the real forces of systematizers, and the most successful system introduced by the manufacturer is made so, not by adopting the rules, routine, and records of some plan of others, but by using them to obtain ideas in applying the principles to his own business.

5. Most of the methods in use today represent in result the crudest kind of guess, and are unreliable for the purpose of reducing costs. On the other hand, accurate costs have accomplished as much during the past few years in the way of reducing the cost of production as new inventions have. The value of the systematization of factories is measured by the difference between what is done and what can be done. Personal bias and prejudice have prevented the inauguration of modern methods and machinery that would have cast a light on the facts in such a way as to eliminate the feeling itself had these methods been inaugurated before this prejudice had worked to such an extent as to destroy the business

6. A very important point to be considered in connection with a cost system is the *human element*, that is to say, the plan

or method introduced in any business, in order to be of any value whatever, must have the backing, sympathy, and critical supervision of the management of the business.

The cooperation of the management, the superintendent, and the foremen with the cost department is a necessity, in order to obtain satisfactory results; and, to economize time and expense, *mechanical aids* should be employed in the forms of numbering, adding, and computing machines. They save time, rechecking, and expense in printed forms and are more accurate than clerks. Various short cuts will be developed by experience in the handling of the work.

COST ACCOUNTS

7. Among the accounts of the modern factory, none occupy a more important position than do the *cost accounts*. They are the microscope of manufacture. They reveal the otherwise imperceptible germs of failure that feed and fatten on the profits and destroy the vitality of the business. When properly adjusted to the general system of factory operations and records, they enable the management to ascertain with at least fair accuracy the cost of the goods produced. But this is not all. A cost system that merely discloses the fact that a certain unit of production costs a certain amount of money may serve a highly valuable purpose, but it is falling far short of its highest function. It should have as its ultimate aim and object the disclosure of data that show *why* the unit of production costs the amount that it does. It should give the production costs, show what goes to make up these costs, and, properly used, be a tool for cutting down these costs.

A knowledge of production costs enables the manufacturing concern to make its price intelligently and to know just how low it can, when necessary, cut the prices without incurring losses; or, if the conditions justify a loss, to know exactly how much loss is incurred in the figures quoted.

MODERN METHODS

8. Modern commercialism not only demands the finest machinery and the most capable men, but also renders it imperative that all component parts be knit together by *modern methods;* that is, commercial organization.

The vital elements of industrial enterprises are, first, the application of energy along those lines with which the greatest results can be accomplished, and, second, the elimination of waste that interferes with such results.

To build up an organization efficient as to its ultimate economic possibilities, each process must be analyzed into its ultimate units and compared in each step of the process with an ideal of perfect conditions. Due allowance must be made for rational and practical conditions, and thereafter there must be established an attainable commercial standard of every step; also, a strong effort must be made to maintain continuously this standard, involving both qualities and quantities—the interlocking and assembling of all these prime elements in each process into a well-built, smooth-running machine. All this means records, some of which may seem to be of a more or less complex nature, and yet any business that has many distinct departments ceases to be a *simple* proposition. Where it is desired to institute efficiency methods, efficient records are a prime prerequisite. The development of a science involves the establishing of many rules, laws, and formulas that replace the judgment of the individual workman and can be effectively used only after having been systematically recorded, indexed, and so on.

ADVANTAGES OF A COST SYSTEM

9. A cost system is often looked on as a means of obtaining the cost of production only. This is a wrong impression, as the information is extremely valuable in other ways. The following paragraphs explain in detail many advantages of a cost system.

10. Paying Losses Out of Profits.—A cost system shows upon what lines profits are made, and upon what lines losses are

incurred. There are manufacturers who are unaware of the fact that one or two profitable departments of their factory are paying the heavy losses of others that for one reason or another are not netting expenses. They are satisfied with the combined profits, which are small, not realizing that the large profits they are actually making are used to pay the heavy losses of certain mismanaged departments of their business.

11. Data for Reducing Costs.—A cost system furnishes the necessary data incident to reducing the cost, either by eliminating certain unnecessary expenses or by increasing the production of various departments in which inefficiency, as indicated by the system, is shown.

Information of this character also constitutes the basis for the inauguration of more modern machines in lieu of antiquated equipment, or for the installation of machines and added equipment necessary to increase the capacity of certain departments, so as to effect a working balance between the various operating departments. This will be the means of preventing much lost time in the factory—one of the principal losses in any business.

12. Efficiency.—A cost system serves as a basis for judging the efficiency or inefficiency of each plant, of each department, of each foreman, or of each group of men.

Inefficiencies are what should be constantly searched out and eliminated. Analysis is the diagnosis, and if proper treatment is administered by process of elimination, efficiencies will take care of themselves to a considerable degree. By investigating and caring for the inefficiencies, the management begins at the proper point, namely, the bottom. Most persons begin at the top, fix final standards in their own minds, and then promptly unload the responsibility on the shoulders of others who, without proper training and supervision, have but a hazy idea of what is really expected of them, and, since what is anybody's work is nobody's work, results are practically nil.

A business enterprise is like a chain, the strength of which is measured by its weakest link and, until the profit-eating elements—the inefficiencies—are discovered and eliminated, it

cannot be expected to produce the results anticipated by its founders or by its present management.

Although it is true that efficiency methods may be introduced into manufacturing plants without the aid of a cost system, nevertheless, it is also true that the greater results to be obtained along efficiency lines must come through the introduction of cost keeping or of cost-data compilation.

13. Harrington Emerson in his book on "Efficiency" states that the subject of efficiency may be practically summed up as follows: Waste of material; waste from friction; waste of design; waste of effort; and waste due to crude organization, in a word, due to inefficiency.

The proper system for compiling cost data will unquestionably show waste of material, friction, and design. The proper wage system will show waste of effort, and, provided the premium, differential rate or any bonus plan of wage system is introduced, there must be used considerable data showing individual labor cost if any such system of wages is to be inaugurated successfully. The cost system is of unquestionable value to every manufacturer if properly carried out, and efficiency methods introduced by wage systems and other methods of increasing the production of the plant at a much lower cost than it had been operated are also of great value.

14. Increase of Business.—A cost system supplies the proprietors with the information requisite for the building up of an increased business, and takes the place of the personal touch they had with its details in the early days of their operations, but now beyond their personal supervision. The manufacturer who does not keep constantly in mind that the information furnished by a cost system provides him with the means of reducing the cost of production in any of its details, is losing the principal element of its value. The man with the proper organization and system that furnish him with the knowledge of details incident to the operation of his business is in a position to shape the policy of the enterprise in a definite manner, and in a way that is entirely out of the question for those who drift along from day to day and year in and year out with the

only hope in view that somehow things may come out all right in the end.

15. Leaks.—A cost system locates the leaks. Men who are carrying on operations sufficiently well to yield fairly good dividends on the capital invested are often disposed to let well enough alone. This is a great mistake, as in almost every plant there are leaks that a proper system and organization would at once bring to light, and the elimination of these leaks very often results in making the dividends, formerly regarded as satisfactory, look small.

No well-informed manufacturer will question the statement that there are leaks and weak spots in every establishment, regardless of the length of time the business has been established. He will also admit that without a systematic organization it is impossible to ascertain the extent of these leaks, where they occur, and the cause. That such leaks in manufacturing, due to various causes, interfere with the efficiency of the factory and are a direct hindrance to the growth of the establishment, will be admitted by any one conversant with the operation of a factory on systematic lines. Every manufacturer, therefore, should make an effort to determine exactly where these leaks and weak spots exist and endeavor to remove the cause, regardless of any cost within reason.

16. As long as these adverse conditions exist, a competitor operating with a better organization and system can and will undersell and slowly but surely gain the trade of the less fortunate, or, rather, the less progressive, operator, until the foundation stone of the once paying and promising business is undermined and possibly ruined. Such defects are best eliminated by a systematic method of obtaining the information in a complete and absolute manner, showing just where these defects exist, and an accurate cost system and a proper factory organization are the only means by which this can be accomplished. It must be kept in mind that these leaks mean actual losses, which, in turn, mean smaller profits. In certain lines of manufacturing, competition is so keen that the difference of a fraction of a cent in the cost of a single operation is of great

importance, and may mean failure. Consequently, guesswork in such instances is dangerous, and in any case poor policy.

17. Selling.—A cost system serves as the basis for determining selling prices. With a definite knowledge of the cost of an article, the sales department could push the sale where it is known that the most profit will be made and retard the sale of the article on which a loss is incurred.

In some establishments the salesmen are paid a percentage on certain articles sold, according to the amount of the profit derived from their sale, and where articles are sold at an actual loss no commission at all is paid to the salesmen.

18. Perpetual Inventory.—By means of a cost system a perpetual inventory is kept, thereby enabling a loss-and-gain statement to be made semiannually, quarterly, or even monthly without the taking of the physical inventory.

A fundamental principle in any modern cost system is the maintenance of a raw-stock record, such as is commonly designated a *going inventory*. This is on the assumption that material is valuable, as cash is valuable, and within reasonable limits is to be guarded in the same way. If the stock on hand does not agree with the stock that should be on hand, as shown by the records, the reason for the discrepancy is to be discovered and the necessary steps taken to prevent the recurrence of this discrepancy if it is preventable. Such a difference may result from any one of a dozen different causes, some of them not preventable, but as every one of them increases "production" cost, fullest information should be had in order to cut off those causes which may be avoided and to make due allowance for those which cannot.

19. Profits or Losses.—In the majority of enterprises today the profits and losses are known at only the end of the regular fiscal period, when an inventory is taken and the books closed. Even then the result is not necessarily correct, inasmuch as the accuracy depends entirely on the correctness of the inventory, which, in the ordinary system, cannot be checked or verified. The result, whatever it may be, appears in the

books of account for the entire period in one amount, and admits of no verification due to the principle involved.

There are two important questions that relate to this: (1) Are the results apparently satisfactory? and (2) Are they a disappointment, or a surprise? The first question may be taken up by asking one. Thus, Should a result in gross, which is apparently satisfactory, be accepted without question? A careful analysis of this will result in a negative answer. There is absolutely nothing in the profits shown in this manner to indicate whether the results should not have been considerably more. There may be many articles made at a loss, with the result that the articles upon which there is a good margin of profit would be paying the losses resulting from the sale of the other class of products. In taking up the second question, the first query that arises naturally would be, What am I going to do about it? The first step necessary to correct a fault is to locate it; and, if the mass of detail that enters into the production of any plant is buried, owing to a lack of records dealing with the component parts of the product during the period of 6 to 12 months before results are obtained, this would indicate that some action is necessary in providing a plan that will admit of locating or determining the cause.

20. Monthly Statement.—Perhaps the most important factor in connection with system and organization is that one which enables a business man to have laid before him a monthly loss-and-gain statement outlined to show how the result is reached by a proper classification of his product. Compare for a moment the difference between such a statement and the one given at the end of the year, without any more information than the bare result.

With the statement at the end of the year, nothing can be done to change the result of the preceding period; only an investigation can be made, and this may or may not result in anything of a definite character bearing on the operations of the new year. With an analyzed statement showing the result of the month, with all the facts admitting of verification, it becomes possible to exhibit mistakes and losses. Furthermore,

where the results are on the wrong side it is shown in the first month, instead of waiting, as in the old plan, for 12 months to elapse before ascertaining what the result may be. The executive may have the information at hand in this instance to enable him to weed out the faults, and thereby gain as a result of these changes 11 months of profit that otherwise would be lost.

21. Summary.—From a management standpoint, the three principal functions of a cost system are: (1) The ascertaining of actual costs; (2) from the data thus obtained, the reduction of subsequent costs; and (3) the relation between the individual costs and the selling department. Unless these three elements are utilized, in connection with a cost system, its full value can never be obtained.

PROCEDURE IN COST DETERMINATION

COST-ACCOUNTING METHODS, PRINCIPLES, AND CONDITIONS

METHODS

22. Although the importance and the desirability of accurate methods of ascertaining the cost of production are generally conceded, and while much attention has been devoted to this subject and large sums of money have been expended annually in perfecting cost-keeping records, there is a general lack of knowledge of the principles involved; and the problem now in hand is to present an analysis of the elements that go to make cost, and to indicate the lines along which methods must be devised to gather and to classify the facts that are used in its actual determination. The accuracy and effectiveness with which this is done rest on (1) the methods used and (2) the principles involved.

23. Cost-finding methods are divided into two classes: (1) estimating-cost methods and (2) actual-cost methods.

The **estimating-cost method** consists generally in estimating a certain amount of material, a certain amount of labor, and a percentage to cover overhead expenses in arriving at the cost of any article, and very frequently there is linked with this method an actual estimate of material and labor by counting the material and taking an actual count of labor so far as it relates to the manufacture of one or more articles at a given time, with the idea that future manufacture of the same article will use up the same amount of material and labor. If it were possible by the ordinary methods in use to estimate the cost of an article correctly, there would not be so much demand or need of more complete cost-accounting systems.

The weakness, however, in most of the estimating-cost systems in use, is that they lack all elements of proof. The difference between the estimating-cost and the actual-cost method so far as a mathematical proof is concerned, is similar to the difference between single-entry and double-entry bookkeeping. Single-entry bookkeeping is a method of recording transactions without the proof of the trial balance, and in all such systems of bookkeeping faith alone is the only standard by which such systems are used; whereas, in double-entry bookkeeping a trial balance will usually demonstrate the mathematical correctness of the entries in the books.

24. Another method in connection with estimating costs is the handling of indirect expenses, or burden. Often, it has been found that this one element in estimating cost systems is the most troublesome and the most inaccurate of all; and, while in a large number of cases the manufacturer himself may be able to gauge, as well as an expert, the estimating cost of material and direct labor that goes to make up the cost of the product, he is not qualified to determine actually the proper percentage to add for overhead. The reason for this is that, in the majority of cases where this method is used, the accounting as well is primitive, and the classification of accounts is not sufficiently clear or divided to enable the manufacturer to get at the proper percentage of the overhead to add to the cost.

Without this essential information being compiled in the proper manner, it is an impossibility for any one to gauge this part of the proposition correctly.

PRINCIPLES AND CONDITIONS

25. There are two fundamental principles of cost accounting and two general conditions in manufacturing, and the application of these two principles, according to one or the other of the two general conditions, will embrace every line of manufacture. The two fundamental principles are: (1) The productive-labor method of cost finding (hours or wages), and (2) the machine, or process, method of cost finding. The two general conditions are: (1) The special-order system and (2) the product system.

26. In order to link the two cost-accounting principles to the two conditions of manufacture, the special-order system may be linked to the productive-labor method of cost finding or to the machine, or process, method of cost finding. The product system may also be used in connection with the productive-labor method of cost finding or the process, or machine, method of cost finding.

27. The term **special-order system** means that system of cost accounting in which the elements of cost are charged to an order, a job, or an article. The **product system** is that type of system in which the costs are charged to the product or the process without relation to any order or article.

The **productive-labor method** of cost finding is applicable to those plants in which the productive labor is the essential feature of the production. The **process, or machine, cost method** is applied to those plants in which the product is made by machinery, and in which the labor is merely an incident in connection with the supervision of the machines and not of the production.

28. The preceding principles governing cost finding are practically the same in every line of manufacturing, but their

application in the devising of the methods and forms with which the data is compiled is different in each and every case, not only on account of the difference in the manufactured product and conditions of the plant, but also in the different methods used by the one who devises the system. The final result may be the same, but the method of arriving at the final result, if not the best method, is responsible for the term "red tape" sometimes used in connection with cost finding.

ELEMENTS OF COST

CLASSIFICATION AND EXPLANATION

29. The elements that comprise the cost in all manufacturing enterprises are made up of three principal divisions: (1) Material; (2) labor; and (3) indirect expense. The first two of these divisions may be subdivided into *direct* and *indirect*.

30. **Direct material** is that element of material which enters into the product itself and can be charged accurately to the article. **Indirect material** consists of such material as factory supplies used in the processes, but which do not enter into the product itself. These and also material that does enter into the product, but which it is impractical to charge as a direct-material cost, are not chargeable directly to any one article, but must be distributed over the number of articles affected by their use.

31. **Direct,** or **productive, labor** is limited to that labor which is actually expended on producing the article manufactured. All forms of labor, such as repairing, handling, supervising, etc., that are not engaged directly on the article itself, are designated as **indirect labor.** As in the case of indirect material, the expense of this non-productive labor is distributed over that part of the production which is indirectly affected by it.

32. **Indirect expense,** together with indirect material and indirect labor, compose the last element of cost, which is

sometimes called *burden* and sometimes *overhead*. This large element of cost must be distributed accurately, by some known ratio, over the production, if correct costs are to be obtained

Indirect expenses, as a whole, consist of (1) indirect labor; (2) indirect material in the way of supplies, etc., and (3) indirect expense, comprising supervision and all labor not employed directly on the product, such as light, heat, power, freight, express and cartage inward when not charged directly to material cost, maintenance, insurance, taxes, interest, rent, depreciation, and, in short, any factory expense that does not enter into the product itself. These are divisible into two general classes. One of these classes can be apportioned to certain products or parts of products because they are incurred in a

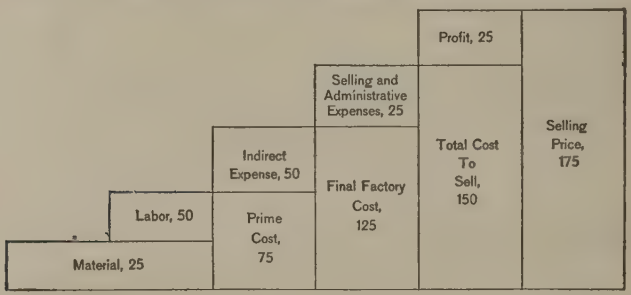

FIG. 1

particular department of the factory. The other class consists of such expenses as are incurred for the benefit of the entire plant, and must be distributed over all departments on an equitable basis.

33. Selling and Administrative Expenses.—If the selling and administrative expenses are added to the factory cost, the cost of marketing the article will be obtained, and, if the profit is added to this, the result will be the actual selling price.

34. Diagram From Cost to Selling Price.—The relation between the different elements of expense to a manufacturer may be illustrated by a simple diagram, Fig. 1, which, in the light of what has been said. is self-explanatory.

DETERMINATION AND DISTRIBUTION OF INDIRECT EXPENSE

35. The cost of direct material is a matter of market price at the time of purchase, and by calculating the amount of product manufactured out of a certain supply of raw material, this part of the prime cost is determined. The direct labor cost is not very difficult to calculate. In fact, in piecework it is given directly on the product without further calculation, unless there is required the addition of the cost of several parts or processes to find the cost of the whole. But in the majority of cases it is quite a different matter with the more indefinite element, *indirect expense;* and when it is considered that this expense will run from 50 to 350 per cent. of the direct labor, according to the conditions of manufacture, it can be readily understood that too great care cannot be used in the determination and distribution of this division of factory cost.

36. Classification of Items.—The first step toward making the proper distribution of indirect expense is to classify into various divisions the items that comprise it, after the manner mentioned previously. As a rule, this classification will vary in the application to different factories. Now, since the distribution must be added to the direct labor and material, there must be a suitable classification of these elements also, in order that the theory may be carried out.

37. Division of Factory Departments.—The next step is to divide the factory into a number of operating departments, according to the processes of manufacture. These operating departments, of course, will vary materially, according to the class of manufacturing and the nature of the product manufactured. It should be the aim, in making these divisions, to limit each department to operations that are as simple and uniform as possible. Where the processes in the same department differ in any appreciable degree, the same difficulty arises that existed before the classification was made, and to avoid which it was undertaken at all. The following are given as illustrations of what the operating departments might be in three different branches of manufacturing.

In certain kinds of textile mills, the operating departments would be as follows: Sorting, scouring, carbonizing, drying, picking, carding, spinning, knitting, rib knitting, seaming, dyeing, boarding, finishing, box, and packing.

Likewise, in a certain class of stove manufactories there would be the following departments: Pattern, core, foundry (which may be divided into two departments, as cupola and molding), cleaning, polishing, nickeling, tin shop, and mounting (assembling).

In a machine shop, the departments may sometimes be divided into the following: Foundry, tool, paint, pattern, polishing, planer, lathe, woodworking, and assembling.

38. Department Cost.—It is evident that the cost of any article in any one department can be obtained by the addition of four distinct elements of cost in that department, namely, (1) direct material; (2) direct labor; (3) department indirect expense, that is, the expenses that may be charged to that particular department; and (4) general indirect expense, that is, its share of the general indirect expenses of the plant that cannot be charged against a department but must be distributed pro rata over the several departments.

39. Variation of Department Cost.—The usual method of adding a certain percentage upon every article manufactured to cover all indirect cost is wrong in principle. The indirect cost is not the same for each class of articles, unless the factory limits itself to manufacturing a single uniform product; and even here, the manufacturer cannot tell the true cost of a certain process to which the product is subject unless the indirect expenses are distributed over the several departments as previously outlined. Some departments have more indirect expenses than others. For instance, the number and salary of foremen may be greater in one department than in another, or one department may require extra floor space, etc.; and in the same manner such items as indirect labor, power, and supplies vary considerably in different departments.

40. Again, not all articles pass through all the departments or the same departments, and the charge for indirect expenses

varies accordingly. To illustrate this, let it be assumed that there are five operating departments in a certain factory. While one class of product may pass through all five of these departments, another may pass through only three. It is evident that by charging a fixed percentage for indirect expenses on all articles, the product that passes through only three departments is being charged the same percentage as the product that passes through all five. In other words, the indirect expenses of the two departments through which this product does not pass are being charged against its cost, the same as if it had. From this, it can be clearly seen that unless the indirect expense is applied, first, to the department in which it occurs, and, after this, by the departmental distribution of the general indirect expenses of the whole plant, the accurate cost cannot be known. Otherwise some articles will be charged with more and some with less expenses than they should be.

Costs should therefore be recorded into each operating department under the general headings mentioned previously; namely, (1) direct material; (2) direct labor; (3) indirect expense applying to each department; and (4) that part of the general indirect expense which is prorated over each department.

ELEMENTS OF INDIRECT EXPENSE

41. Before taking up in detail the subject of the distribution of indirect expenses, it should be well to consider a few of the items that comprise such expenses.

42. Light, Heat, and Power.—The light, heat, and power of a plant are usually distributed from one or more centers, and, in order to get at the approximate cost for the running of each department, it is necessary to arrive at some ratio with which each department is to be charged. Once the ratio is obtained, the expenditures relating to this particular phase of indirect expense may be divided among the different departments. It should be noted, however, that this ratio cannot be determined on a long-time period, as there are very often considerable intervals when some of the machines of a depart-

ment are not running, and this would make a difference in the actual distribution.

43. Interest.—Interest on investment in a plant is very rarely included in the cost of manufacture, and there is a difference of opinion among accountants as to whether interest should be included in the cost. When interest is included in the cost, there are two principal ways in which it enters as an expense: (1) The interest on the amount of capital invested, represented by the plant equipment; and (2) where all or any part of a plant is owned subject to mortgages or notes, the interest in this case practically taking the place of rent, and being just as much a part of the expense to be distributed over the cost of production as rent would be. The necessity of a proper distribution of this expense departmentally can readily be understood, when the fact is considered that no two operating departments have equipment of the same value. One department may contain very expensive machines, while those in another department may be inexpensive. Thus, the ratio of distribution of interest expense should be based on the then present value of the equipment in the different departments.

44. Depreciation.—The next element of indirect expense, namely, depreciation, is the most complex and difficult to estimate. Not that the principles involved are inexact or hard to understand, but the actual rate of depreciation depends on so many different and variable factors that it is out of the question to set better than an approximate figure that appears to the judgment as being the nearest approach to the real conditions possible.

It is only necessary to mention a few of the factors to appreciate the difficulty of arriving at any definite results in figures. Some of the more important factors are: (1) The nature and construction of buildings and equipment, together with their conditions; (2) the deterioration of plant in general and of machinery in particular, due to wear and tear; (3) the amount spent for maintenance in the way of repairs and renewals; (4) the invention of new methods or new machines that may or may not entirely replace the old ones; and (5) the permanency of business, and likelihood of increase or decrease in the same.

Considering that each one of these items is complex in itself and subject to many conditions, and that there are very many other factors that enter into the problem, such as increase in value of site of plant, amortization, interest, peculiar uses of machines, property leased or owned, rate of production, idleness of plant, etc., it is little wonder that manufacturers hesitate about going into the details of this subject.

45. Depreciation, as a term, may be defined as loss in value. This loss may be due to age, use, or a combination of these two with several contributory causes. Thus, in a factory, the amount of depreciation is the measure of loss in invested capital. The manufacturer who calculates his profits without taking into consideration this important feature is obtaining figures that misrepresent the conditions. The plant has lost in value during the process of production, and this loss of value is just as much a part of the cost of production as wages or any other similar element.

In applying depreciation to the product, the same general principles hold good as in other forms of indirect expenses. As far as possible the depreciation that occurs in one department should be charged to the articles passing through that department, the remaining depreciation to be prorated over the whole plant in the same ratio as the other general operating expenses. It is obvious that no machine can depreciate in value more than the original cost plus the amount spent in repairs and renewal of parts. Therefore, it may be said that the purpose of setting aside a depreciation item of expense is to distribute the cost of a machine over the product it turns out, through a period of time estimated as the average life of that machine; and the same is true of depreciation as written off on the buildings and property of the plant as a whole.

46. There is, however, one factor mentioned in the list, the relation of which to depreciation needs to be noted more particularly. This is the item referring to the amount spent for maintenance in the way of repairs and renewals. It is clear that whatever is spent in counteracting the results of age and use tends to lessen the amount of depreciation. Theoretically,

if a factory were kept up to its original conditions by repairs and renewals, this cost would exactly counterbalance the depreciation. However, this is quite impossible in practical operation. Repairs are made in spots, while the remaining parts are allowed to drift along, usually without affecting the efficiency of the plant to any appreciable extent. In some cases the renewal of parts may increase the value of a machine to a point beyond its original cost, as where the ordinary cast-iron parts are replaced by steel. This extra expense should not be considered as a counterbalance to depreciation, but more as an additional investment of capital. Just where the line between these two aspects is to be drawn must be determined by the particular circumstances.

47. The net result of this relation between maintenance and depreciation, as it usually appears in a cost system, is to make separate items of each, but to decrease the amount written off for depreciation by the amount spent for maintenance, thus arriving at a result equivalent to the gross depreciation.

The usual method of calculating an average depreciation is to "write off" each year a certain per cent. of the value of the machine or the plant as a whole, thus providing for an actual decrease in value. For instance, if the life of a machine is estimated at 20 years, the rate of depreciation to cover the cost would be 5 per cent. a year on that cost. Sometimes the rate is based on the net value left after previous depreciations, instead of the original cost, which results in more of a sliding scale of decreasing values. The rate of depreciation, in this case, would be set at a higher figure than in the former instance, and the greatest depreciation would appear in the first year.

When this method is applied to a plant as a whole, it is known as the *blanket method*. This is a very simple way, practically applicable to very simple conditions; but it breaks down and gives results far from the truth in large and complex factories. In such cases, the depreciation goes on at a very uneven rate in different parts of the plant, and the blanket method then fails to distribute this part of the "burden" equitably over the product. The results are still further from the truth when

some departments are working to full capacity while others are in a state of semiidleness.

Theoretically, the most accurate plan would be to take a revaluation of all the property from time to time, in which case the difference between any two valuations would represent the depreciation during that period. Unfortunately, there are both the practical obstacles of the difficulty and labor of making such revaluations and the theoretical consideration that such a revaluation must be estimated on a double base, namely, the condition and the earning power of the machine.

48. There is still another way of approaching the depreciation question, which is by the creation of a *reserve fund.* This takes the form of a fund set aside out of the profits, to provide for all repairs and renewals as they are needed. To cover the estimate of depreciation it should be equal to it in amount. This plan has the merit of providing for the depreciation of the plant without changing the figures of the original valuation on the books. The reserve, so set aside, adds nothing to the resources of the company; it is purely a method of providing for depreciation charges before they actually eventuate in expenses for repairs. The charges themselves are assessed on the product and go to increase the cost of production as a true indirect expense. Where there is any question as to the rate of depreciation, it is the wiser course to choose the higher rate. It may be called a pessimistic view, but in case of error it is error on the right side; and any difference can easily be corrected when the time comes by simply restoring the value where it belongs. In the other case, the books show a false valuation of the plant, on the wrong side; that is, overvaluation, for which there is only one cure, namely, recourse to the loss-and-gain account. Besides this, there is always the element of unforeseen contingencies that may happen at any time, and for which a high rate of depreciation is the best and safest plan of self-insurance for the manufacturer.

METHODS OF DISTRIBUTING INDIRECT EXPENSE

49. In the preceding discussion on the elements that comprise actual cost, it was shown that indirect expense, far from being a minor item, is quite on a par with material or labor cost, if not actually more important. It is unquestionably the most difficult to analyze and reduce to figures, and even with this accomplished the problem is only half completed. The question still remains, how to apply this expense to the manufactured product in such a way as to reveal the true cost of production of the separate articles or classes of articles. Unless this is determined approximately near the real truth, the specific end or purpose of all the preliminary steps is still unrealized. Thus, the correct distribution of the indirect expenses becomes one of the essential links in the chain of process used in cost finding, without which no results can be depended on as accurate.

50. From time to time various methods of effecting this distribution have been proposed. These methods vary widely in theory and involve distinctly different processes in execution. They have been devised for the most part by men who were themselves interested in certain lines of manufacture, and who have arrived at them by a study of conditions in their own plant, or in factories of the same character.

It is a perfectly natural result that there are now several methods recognized as standard, each one of which is suitable to certain conditions while being altogether out of place when adopted apart from these conditions. It is obvious that no one method can be recommended for general use, be it ever so efficient in its own field. The conditions of manufacture and the nature of the indirect expenses incurred in the different manufacturing lines are entirely too diverse to encourage the hope that such a general method will ever be discovered.

51. When it comes to the point of actually choosing a method of distribution in a concrete instance, the manufacturer is generally confronted by such a variety of conditions and circumstances, apparently peculiar to his own plant, that he is prone to abandon the case and confess himself unable to cope

with the situation. The complexity of the indirect expenses as a whole and the difference in their character in different parts of the factory are the two leading factors that induce this feeling of helplessness.

It is to meet the latter difficulty that the plan of dividing the factory into departments was devised. Each department should be so formed that the expenses connected with it may be grouped and treated departmentally. This suggests the idea that different methods of distribution may be used in the same factory in different departments; and this is actually done in some cases.

52. The difficulty arising from the complexity of indirect expenses as a whole, in connection with different classes of product, is not so easily disposed of. The manufacturer refuses to be burdened with a complex system of cost finding, both by reason of expense and inconvenience. What he wants is a method, as simple as possible, that will give as accurate results as could be expected. Unfortunately, where the conditions are complex, the method of dealing with them must also be more or less complex. There is always this conflict between the desire for simplicity on the one hand and accuracy on the other, and this, in practical life, is generally settled by a compromise.

In any particular case, the most practical method can be determined only by having a knowledge of all the methods in general use and the underlying principles of the same, together with an understanding of the conditions in a factory to which one method or another is particularly applicable. It is the aim of the following discussion to present the methods in such a way as to lead to this understanding.

Before entering on the discussion of the standard methods, it might be well to examine one of the makeshifts commonly used for figuring and distributing indirect expenses. It is based on no principles of production whatever, and frequently includes the selling expenses of the business in addition to the factory indirect expenses proper. If a name could be given to it, it might, as has already been inferred, be termed the blanket method.

53. Blanket Method.—The total of the general expenses of every character, except labor and material, is divided by the total value of all sales at the end of the year in order to ascertain the ratio that the general expenses bear to the volume of business; this is used as a basis for computing costs the following year. The total of the labor and material cost of each article is increased by the ratio thus determined, and this amount is set down as the true cost of the article.

It will at once be perceived that the average results of one year are applied to the operation of the succeeding year, when very possibly entirely different conditions may prevail and when the volume of business may increase or decrease. It is also applied regardless of conditions or variations in any of the elements of cost.

Furthermore, the ratio thus obtained is based on the selling price, whereas in the application it is frequently computed on the cost price, as just described. This is decidedly poor arithmetic, to say the least, since the cost price and the selling price are entirely different elements. Nor can the manufacturer escape this trouble by waiting until the article is sold and then computing the indirect expense on the sales price, as the new selling price may be different and the old ratio rendered valueless.

That this method of calculating costs is in actual use shows to what extremes manufacturers will sometimes be led by the desire to obtain simplicity of method and to avoid trouble and expense in operation. It is difficult to believe any one could expect to obtain even approximately true costs by this plan.

54. Standard Methods.—In considering the standard methods of distributing indirect expense, it will be advantageous to keep clearly in mind the distinction between *departmental distribution* and *distribution over the whole.*

The majority of manufacturers using any one of these methods apply it, in connection with the rate obtained, to the production of the entire plant, without reference to the varying conditions governing the manufacture of different classes of

product. Much of the following description has been written in accordance with this general point of view, and many of the criticisms do not apply if the use of the method is limited to those departments in which conditions are in harmony with its principle of operation.

Seven methods of distributing indirect expenses are herewith outlined:

1. *Direct-Labor Cost.*—Divide the total amount of indirect expenses by the total amount of direct labor, for the same period of time, to determine the *rate* to be used in the distribution.

2. *Direct-Labor Hours.*—Divide the total amount of indirect expenses by the total number of productive hours, for the same period of time, to determine the *rate per hour* to be used in the distribution.

3. *Direct Labor and Material.*—Divide the total amount of indirect expenses by the total cost of labor and material, for the same period of time, to determine the *rate* to be used in the distribution.

4. *Old Machine Rate.*—Divide the total amount of indirect expenses of the entire plant by the total number of productive hours of the operating machines (only), to determine the *average rate per machine hour* to be used in the distribution.

5. *New Machine Rate.*—Divide the amount of departmental indirect expenses by the total number of *operating hours, or other unit of measure*, for the same period of time, to determine the *rate* to be used in the distribution.

6. *Fixed Machine Rate.*—This method of distribution is the same as the new machine rate, except that the method of arriving at the *final* machine cost rate is different.

7. *New Pay Rate.*—Divide the total amount of departmental indirect expenses by the total cost of direct labor for the same period of time, to determine the *rate* to be added to the regular individual pay rates of employes in making the distribution.

These methods are described in detail in following lessons.

COST ACCOUNTING
(PART 2)

FORMS FOR RECORDS OF MATERIAL

REMARKS

1. The **forms,** or *blanks*, required in a manufactory or any other establishment in which a proper cost-accounting system is employed are large in number. Throughout the various Sections, as occasion demands, many desirable forms are used to illustrate the methods of gathering and compiling cost data. These forms in every instance are suitable for the purpose intended, but it must be understood that no one form is adaptable to all lines of manufacture or business; different conditions demand different kinds of forms. The forms employed as illustrations are, of course, reduced in size to facilitate reproduction; the actual size of a form must be such as the requirements of a particular case demand.

2. In this Section are taken up a number of forms that have to do with the purchasing and recording of materials. They include purchase requisitions and orders; material-received sheets; stock records of raw material; factory and production orders and cost sheets; material requisitions and bills of material; and inventory test forms.

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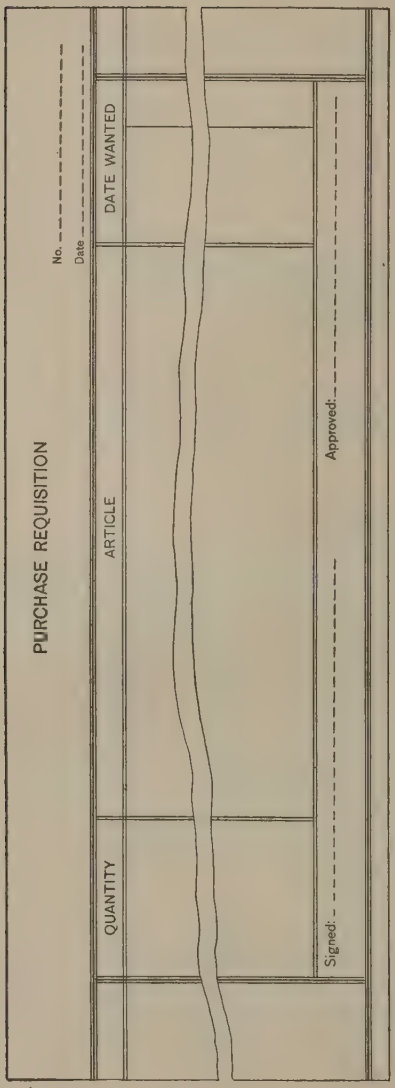


FIG. 1

PURCHASE REQUISITIONS AND ORDERS

3. A purchase requisition is for the purpose of requesting the purchase of material or supplies by the person in charge of the department requiring them. The form is made in duplicate, the original being sent to the purchasing department, and the duplicate kept on file by the department until the goods ordered have been received. This requisition, however, should be passed on by the person in charge of the stock records, who should only approve of the purchasing, provided the condition of the stock on hand justifies the purchase.

Fig. 1 shows what is probably the simplest purchase-requisition form that can be devised for the purpose intended; Fig. 2 shows a form with a little different classification.

Purchase Requisition

No. _____

To _____
Purchasing Agent

_____ 19____

Purchasing Department
Ordered _____
Purchase Order No. _____

Please order the following articles for the use of _____

DESCRIPTION					
FROM	ARTICLE	QUANTITY	DATE WANTED		APPROVAL OF COST DEPT.

Ordered by: _____ Approved by: _____

FIG. 2

A. B. C. Co.
New York.

PURCHASE ORDER.

No. _____

To _____

Address _____ _____ 191 ____

Terms _____

Please Ship the following: Ship via. _____

Place our order number on all Invoices and packages

QUANTITY	DESCRIPTION

You are hereby authorized to furnish the above articles as stated. Acknowledge receipt of this order and state when you will ship.

A. B. C. Co.

Per _____

FIG. 3

4. The **purchase order** is usually made out in duplicate by the Purchasing Department on receipt of the purchase requisition. The original is sent to the seller, and the duplicate is kept on file until the goods ordered have been received.

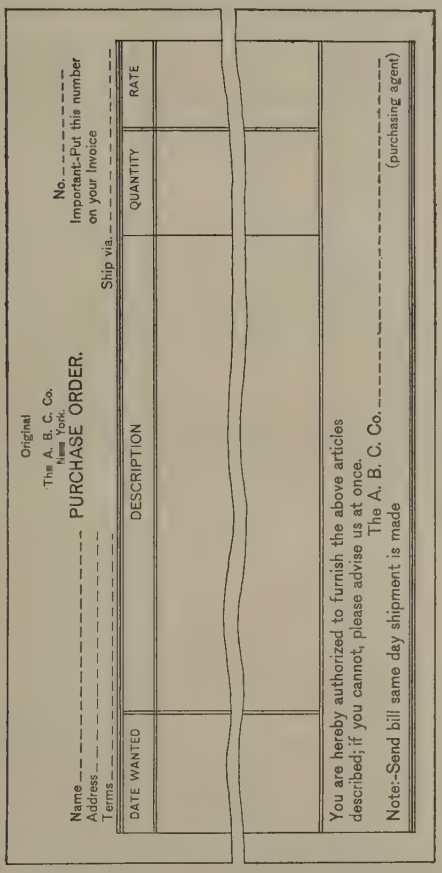


FIG. 4

When the goods have been received, the material-received sheet, reporting the receipt of the goods, should be attached to the duplicate, which, after being recorded by the cost or

Duplicate

The A. B. C. Co.
New York.

Name_____ PURCHASE ORDER. No._____
Address_____ Important:-Put this number on your Invoice
Terms_____ Ship via._____

DATE WANTED	DESCRIPTION	QUANTITY	RATE	AMOUNT	CHARGE TO

You are hereby authorized to furnish the above articles described; if you cannot, please advise us at once.

The A. B. C Co._____

Note:-Send bill same day shipment is made (purchasing agent)

FIG. 5

stock clerk, should be attached to the invoice and placed on file.

Fig. 3 illustrates the style of form in general use for all ordinary purposes. Figs. 4 and 5 show the original and duplicate, respectively, of the style of form employed when the amount purchased is to be charged to a specified order number. This kind of purchase order should be made out in triplicate, and the triplicate copy should go to the cost clerk at the time the purchase order is made out.

MATERIAL-RECEIVED SHEET

5. The **material-received form** is made out by the receiving clerk, and it should show the actual quantity of material received, regardless of the amount of goods recorded on the invoice.

Original

REPORT OF MATERIAL RECEIVED

Purchase Order No. _____ NO. _____
Requisition No. _____ DATE _____
Received from _____

CLASSIFICATION NO	QUANTITY	DESCRIPTION	CHARGE TO

Invoice _____ *191* ___ Received by _____
Entered _____

FIG. 6

In certain industries it is impractical to count the material when received, in which cases the invoice must be accepted for the time being as the record of goods received. Usually, the goods are opened in some particular operating department of the plant at the time they are to be used, when the mate-

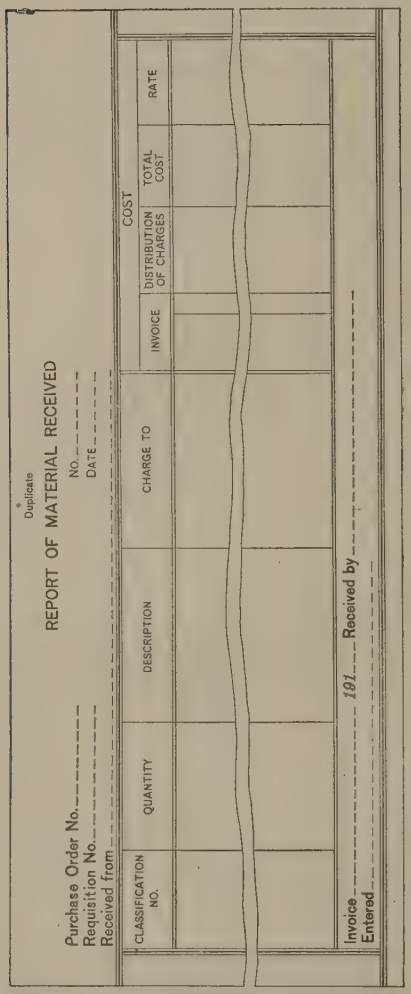


FIG. 7

rial-received record is made out and a claim made for shortages if there are any. All claims relating to the description of the goods are made out by the receiving clerk.

6. In another method used in connection with recording the receipt of incoming material, the quantity ordered is left blank on the copy of the purchase order given to the receiving clerk; that is, this copy shows merely the description of the goods. The material-received sheet, together with the copy of the purchase requisition, purchase order, and invoice, is filed away, making a complete record of the transactions. This method gives a complete check on all entries relating to purchasing, as the purchase order is made out by one person, the receiving report by another, and the invoice by an independent concern, the record made by each person must exactly check with those of the other two.

7. The duplicate copy of the material-received sheet should go to the stock clerk for entry, and if the material is charged to a specific order number, the copy should be used by the cost clerk also. A form similar to those shown in Figs. 6 and 7 may be used if the material is purchased f. o. b. purchasing point, or if the freight charges are so small as not to affect the

Original

REPORT OF MATERIAL RECEIVED No. .....

Purchase Order No. ..... 191.....

Name .....

ARTICLE		
LOT NO.	DESCRIPTION	QUANTITY

Received by:..... Entered by:.....

FIG. 8

price of the material. If the goods are purchased f. o. b. shipping point and heavy charges for transportation are incurred by the buyer, thus affecting the actual cost of the article, it will be found convenient to use a form similar to those shown in Figs. 8 and 9. The distribution of the freight charges may then be made directly on the material-received report without

Duplicate

REPORT OF MATERIAL RECEIVED

No.....

Purchase Order No.....191.....

Name.....

ARTICLE			COST			
LOT NO.	DESCRIPTION	QUANTITY	INVOICE	DISTRIBUTION CHARGES	TOTAL	RATE

CHARGES		OPERATING LEDGER			
DESCRIPTION	AMOUNT	ACCOUNT	COLUMN	FOLIO	AMOUNT

Received by_____ Entered by_____

FIG. 9

copying the information on some other form for calculation and distribution.

The copy of the material-received sheet, together with the invoice, should be used by the bookkeeper in making the entry on the accounts-payable voucher for entering into the register of accounts payable or the invoice register.

STOCK RECORD OF RAW MATERIAL

8. Stock records of raw material are intended for the compilation of information obtainable from the forms previously mentioned, as well as for the recording of information regarding material used or goods taken out of stock (see Figs. 10 and 11).

A perpetual inventory of materials and supplies carried in stock may be obtained by the use of these forms; and this infor-

STOCK CARD
RAW MATERIAL

Classification No.____
Maximum_____
Minimum_____
Article_____ Pattern No._____ Location_____

RECEIVED			DELIVERED			BALANCE	
DATE	SHEET NO.	QUANTITY	DATE	SHEET NO.	QUANTITY	DATE	QUANTITY

FIG. 10

mation may be recorded so as to show the articles on hand as to quantity only, or so as to show not only the quantity of each article on hand but also the cost. The particulars contained on the form will be determined by the purpose for which the information is to be used. If a cost system is not in operation, and it is only desired to safeguard the stock and to assist

STOCK
RAW MATERIAL

Article_____

Classification No._____
Maximum_____
Minimum_____

	ORDERED			RECEIVED					DELIVERED				RESERVED		AVAILABLE	BALANCE		
	DATE	PURCHASE ORDER NO	QUANTITY	PURCHASE ORDER NO	REPORT OF MATERIAL RECEIVED NO	QUANTITY	RATE	AMOUNT	SHEET NO	QUANTITY	RATE	AMOUNT	FOR	QUANTITY	QUANTITY	QUANTITY	RATE	AMOUNT

FIG. 11

the purchasing agent in buying, it will only be necessary to keep the record of stock in quantity, and the cost may be omitted. In either case, a separate card or sheet should be used for each article if the stock is active; but if it is inactive, and if the purchases are infrequent and the stock is used in large quantities, a record may be kept with all the articles listed on one or several sheets, with several blank lines left between articles.

9. In the operation, or use, of forms of this kind, the necessary data relative to the goods received and delivered should be taken from a regular form filled out by some person responsible for the information obtained. Confusion will result if entries are made in these records from personal knowledge or hearsay, and it will be impossible to depend on the results shown or to verify any of the entries should discrepancies occur. Thus, a regular method of posting from separate and independent reports should be followed, both as to material received and material consumed or delivered. If discrepancies occur, when this plan is followed, the balance shown will at least represent facts that will admit of verification, and it will be possible to conduct an investigation that should place the responsibility where it belongs.

10. If it is desired to keep the stock records so as to show the quantity ordered, received, delivered, or used, and the balance on hand according to article, all this information should be obtained from the purchase order, the report of material received, and the material requisition or bill of material, respectively, and not from any verbal information. Sometimes it is desirable to provide columns in the stock records to show goods actually on hand and that part reserved for the completion of a particular order, in which cases the forms should be used and designed in such a way as to indicate for what purpose the stock was reserved, and the quantity. Thus, not only the actual balance of stock on hand would be shown and the quantity reserved for some particular order, but the balance available for other purposes would also be indicated.

In this way, the stock clerk or the purchasing agent can keep track of the maximum and minimum quantity that it is desired to carry in stock by keeping in mind the fact that although the maximum may be actually on hand, yet the reserve of a certain amount for some special purpose really reduces the balance of stock on hand available for other purposes. Therefore, this stock reserve should be deducted from the balance of stock on hand in ascertaining the actual amount of stock available. This deduction should not be made in the records showing stock on hand, but should be entered in a column headed Available.

11. If the same article is carried in stock in numerous sizes, colors, etc., it will be found advantageous to provide separate columns in the stock record for each of these varieties, using a separate sheet or a card for each article, but entering all the sizes, colors, etc. on the same record.

12. At any particular inventory period, the stock records should be verified with the actual inventory. In the event of a discrepancy, whether overrun or shrinkage, the stock records should be changed to agree with the actual inventory, but not until the cause of such discrepancy has been ascertained. Unless the records are reconciled and compared with the actual inventory, and investigation made to ascertain the cause of the differences, the management cannot expect to have records that are worth the time and trouble involved in keeping them. Furthermore, every person connected with this particular part of the business may become more or less careless, and this will result in compiling information that is inaccurate and unreliable.

It will be found advisable to adopt a method of verifying a certain number of articles each day or each week without any one knowing in advance which articles are to be inventoried. This will have the effect of keeping alert those in charge of the stock, as well as those in charge of the records, and will be productive of results that cannot be obtained where the inventory is taken annually or semiannually only. In addition it will keep the stock records adjusted from time to time,

and render an actual inventory of the entire stock at any one time unnecessary. A complete inventory taken annually or semiannually involves a great deal of work; nor is there any certainty after this work has been completed that the result obtained is accurate. A great deal of the stock is often scattered throughout the plant, and is passing from one operation to the other, so that some stock is very often entirely omitted from the inventory or included twice in it.

13. The keeping of stock records may be likened to the keeping of cash records. The cash book indicates the amount of cash received and the amount disbursed. The balance shown by the cash book indicates the amount of cash that should be on hand, which amount should be verified by an actual count. It is thus seen that, in counting the actual cash on hand, there is available a record with which it should correspond and which checks the accuracy of the count. In the case of material, however, when no stock records have been kept, there is no record available with which the inventory as taken can be checked. When it is considered how much money is involved in the purchase of materials, the importance of this matter is evident. Stock records are intended to give information similar to that given by the cash book, and in this respect the latter indicates the amount of cash that should be on hand, and the former the amount of stock that should be on hand. It is to detect and, if possible, to prevent any difference between the amount of stock that should be on hand and the amount that actually is on hand that a stock system should be introduced.

A difference, or shrinkage, in material is the equivalent of an actual loss of so many dollars, without any good or sufficient explanation therefor; and yet the average business man will allow differences of this kind to be adjusted and permanently disposed of without seemingly appreciating or understanding that he is charging perhaps a heavy loss and, in some cases, an unnecessary one against the profits of his business. The same man would not for a moment allow his bookkeeper to charge ten dollars against his loss-and-gain account for a short-

age in cash without experiencing a great deal of alarm; and yet, in such cases, there is no real difference.

FACTORY OR PRODUCTION ORDER

14. The purpose of the **factory** or **production order,** of which Figs. 12, 13, and 14 are examples, is to substitute written instructions to the factory or manufacturing departments for verbal directions, and the forms may be used under certain conditions for cost-keeping purposes.

Whenever orders are issued covering a product that passes through several departments, some of which require different specifications, or whenever the work on the same order is being carried on in several departments simultaneously, *subproduction orders* may be issued to each department describing only the work to be done or the parts to be manufactured in that particular department. Otherwise, the same production order may be issued to all departments alike, by using a manifolding system and making as many copies as may be necessary.

In making out such duplicates, it may be of advantage to issue a copy of the order to the shipping clerk, stating shipping directions, in order that he may be in possession of this information and thus facilitate prompt deliveries. The stock clerk might also use a copy of the order with good results, especially if materials are given out on requisition, and in this way prevent employes from procuring materials and supplies for which no order has been issued. This will not only prevent dishonesty, but will also be the means of bringing to light material that has been wasted owing to shop errors or defective work. The stock clerk should check off the material that relates to the order when such material is delivered, and should not furnish any other material on this order without the authority of the superintendent, stating the reasons for the extra material.

15. The design of the form to be used will be determined by the conditions of manufacture. If it is desired to use the form purely for the purpose of regulating production, only

FACTORY ORDER

No._____

To Foreman_____ Department Date_____

Charge all Material and Time to above Order No.

	DATE WANTED	PATTERN NO.	DRAWING NO.	DESCRIPTION	QUANTITY	

You are hereby authorized to manufacture the above articles as stated

Inspected by_____

Received_____ 19____

By_____ _____ Manager

FIG. 12

Original

PRODUCTION ORDER AND COST SHEET

_____ Department No._____ 19____

QUANTITY	DESCRIPTION	DIAGRAM

Date Wanted_____ 19____

Complete_____ 19____

Signed_____

You are hereby authorized to manufacture the above articles as stated

_____ (Superintendent)

FIG. 13

Duplicate

PRODUCTION ORDER AND COST SHEET

_____Department

No._____
19___

QUANTITY	DESCRIPTION	DIAGRAM

Date Wanted _____ 19_____

Complete _____ 19_____

Signed _____

You are hereby authorized to manufacture the above articles as stated

_____
(Superintendent)

MATERIAL				LABOR					PATTERN		
QUAN.	DESCRIPTION	RATE	AMOUNT	DATE	WORKMAN	HRS.	RATE	AMOUNT	PARTICULARS	RATE	AMOUNT
									TOTAL		
									DRAWINGS		
Total Material Total Labor Total Pattern Total Drawing Indirect											
TOTAL COST				TOTAL LABOR					TOTAL		

FIG. 14

the necessary explanatory matter need appear; but if, on the other hand, it is considered advisable to utilize a copy of the form for cost-keeping purposes, separate columns with the proper headings printed therein should be added and so arranged as to facilitate posting from employes' time reports and reports of material delivered. If it is desirable to keep the cost by operation, proper columns should be provided for each operation, and the form should be so ruled and designed as to enable the cost clerk to add overhead charges and ascertain the total cost of the order.

16. In issuing orders covering contract work or jobs that will involve large expenditures, it will be found of advantage to divide the order not only according to the department but also according to sections, and have the time reported by employes in such a way as to show the time consumed in each particular department on each section or part of the work. The term "section," for example, in a contracting business would apply to foundations, walls, partitions, roofs, etc. This illustration is used not because this kind of form relates only to a contracting business, but because it is sufficiently general to illustrate the meaning of the term section to any one in any other line of business. If section numbers are used and carried through the cost keeping, it will be possible to compare the cost with the estimates and to follow the progress of the work in a more intelligent way than would be possible if the time were reported in total only and posted in one amount as labor on that particular order.

MATERIAL REQUISITION AND BILL OF MATERIAL

17. A **material requisition,** an example of which is illustrated in Fig. 15, merely calls for the article, and on it are given the order number, the description, the quantity, the rate, and the amount. It is to be used for taking all material or supplies out of stock in case a bill of material is not used. The material requisition is made out by the department requiring the goods from stock to be put into process of manufacture.

This kind of form is used in all manufacturing industries in which the business is more or less of a special-order one and the amount of material consumed on an order is subject to constant changes.

18. In nearly all manufacturing enterprises where the same article is made time and time again, consuming the same amount of material, it is not necessary to make out a material requisition every time an article is to be manufactured. In such cases, a **bill of material** (see Fig. 16) is used. A bill of material may be likened to a formula in which a definite con-

MATERIAL REQUISITION No._____

Department_____Date_____19___

ORDER NO.	DESCRIPTION	QUANTITY	RATE	AMOUNT

FIG. 15

sumption of materials is used. In plants where this form is employed, a bill of material giving the particulars as to the classification, number, or piece, is made up for each article that is manufactured. It is not always necessary that a receipt of the material should be signed opposite each classification. Very often one receipt on the bill of material will answer the purpose. These bills of material are made in quantities according to article. When the material is to be taken into process, a copy of the bill of material is filed with the stock clerk and the material is delivered to the operating departments requiring it. Strict instructions, however, should be given that no material, except that covered by the bill of material, should be issued, unless there be used a separate material requisition, which would be an indication that something is wrong in the specifications of the bill of material, or that more material is required owing to some defect or loss.

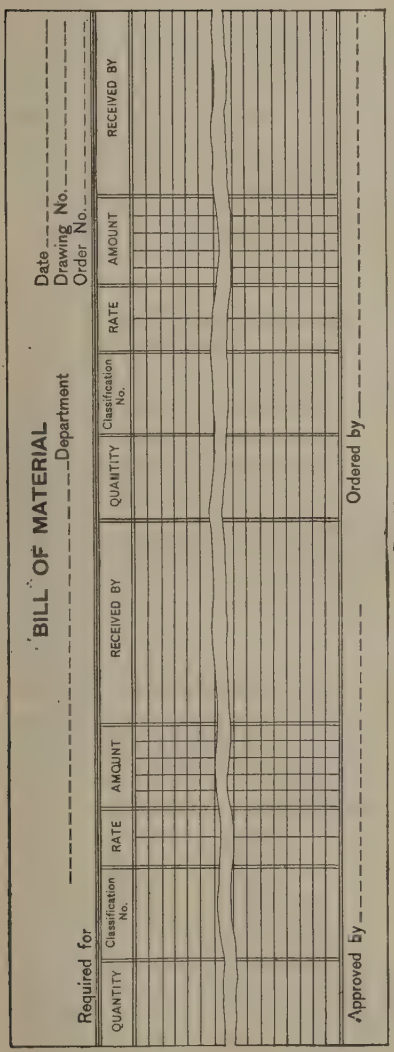


FIG. 16

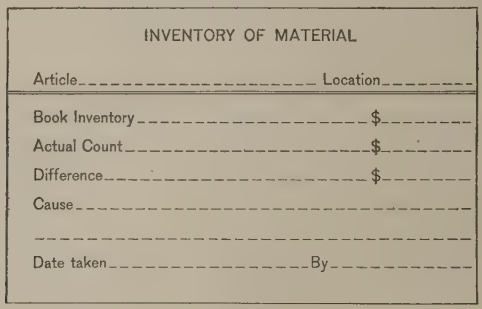
The raw-stock records are credited with the amount and cost of material, as shown by either the material requisition or the bill of material.

INVENTORY TEST

19. The **inventory-test form** (see Fig. 17) is used to show the name of the article, the location, the actual count, the book inventory, the difference, the cause, and the date. This form is of great importance in connection with a cost system. The value of any cost system depends entirely on the reliability of the reports that come from the factory to the office, and, unless there is a check of some kind on reports showing material used, the loss-and-gain statements will be misleading and inaccurate; then, when a complete and actual inventory is taken, and it does not agree with the book inven-

tory, there will naturally be great dissatisfaction with the system.

The method of procedure in making an inventory test is to send the form to the person in charge of the stock, writing the name of the article desired on the form and having the stockman enter the actual count and location of the stock. When the form is returned, the book inventory is inserted; and if the book records do not agree with the inventory taken, the dif-


INVENTORY OF MATERIAL

Article_____ Location_____

Book Inventory_____$_____

Actual Count_____$_____

Difference_____$_____

Cause_____

_____

Date taken_____By_____

FIG. 17

ference should be indicated and the cause ascertained. A discrepancy shown by this form will be the result of errors made either in the stock records or in the making out or recording of requisitions or bills of materials, or the use of material not supported by any requisition. Should there be an error that cannot possibly be located, it will be necessary under such circumstances to charge or to credit this difference, as the case may be, to general indirect expenses.

LABOR COSTS

WAGE METHODS

CLASSIFICATION

20. In any plan of systematization of a factory, the labor is an important element, and in many plants it is the most important. Therefore, in the introduction of a wage system or a method of compiling labor-cost data, it is wise to consider well the human element in this connection. In the choice of a system of paying wages, each plant must be considered as a specific problem.

One of the greatest leaks, perhaps, that develop in cost finding is through the compilation of labor costs, the principal elements of waste being loss of time either on account of waiting for work or of "soldiering," by which is simply meant loafing. Now, considering the fact that it is absolutely necessary to compile close data of labor costs if true results are to be had, and considering also the fact that a great deal of detail in any cost system is devoted to this phase, it is advisable to know every possible element that bears on this all-important subject.

Before entering into a discussion in reference to the detail of keeping labor costs, a fair understanding should be had of all the different elements of wage systems and their relation to both employer and employe. There are two ways open to the employer to decrease the labor cost of production. He must either make a direct cut in the wages of the men or find some method by which the output can be increased. The former way is almost sure to result in dissatisfaction and poor work on the part of the employes. It requires good judgment in weighing the advantages and disadvantages of any wage system and selecting the one that promises the best results.

21. There are seven recognized and standard methods of paying wages. These methods or plans are designated as: *Day rate*, *piece work*, *differential rate*, *premium*, *bonus*, *profit sharing*, and *stock distributing*.

Each plan is subject to more or less modification, such, for instance, as the "stint system," the contract system, the differential bonus, the Gantt system, the Sante Fe system, and others. The purpose here is to describe only the seven standard methods, as a complete explanation of the combinations that could be made, as well as the other methods, would lead into almost endless detail.

The cooperation between employer and employe is becoming more and more necessary from an organization standpoint for the successful conduct of business. From this point of view it may be said that the purpose in discussing wage systems is to establish a better relation between the employer and the employe, and thus, in the end, accomplish what is for the benefit of each—a decrease in the cost of production and a more satisfactory arrangement in the matter of pay.

A knowledge of the general principles on which wage systems are conducted will be particularly valuable to any one in the devising of time systems in connection with a cost system.

DAY-RATE METHOD

22. There are many plants in which it is impractical to install any method of paying wages other than the **day rate.** This method applies in very few cases to the plant as a whole, but more specifically to certain kinds of labor. Usually, it embraces the highest type of labor, and in many cases the labor that does not result directly in the production of any article. On the other hand, there are many disadvantages connected with this system as a whole when it is applied to many forms of direct productive labor, and its scope has been extended far beyond that which would produce the best results.

23. The day-rate plan pays each workman a certain wage for a certain number of hours' work, the amount depending

mostly on the skill called for, partly on the locality in which the plant is placed, and partly on labor conditions. The severest criticism that can possibly be made against this plan is that it removes the incentive for a workman to do his best. The human element is here shown. Usually, unless a workman is actuated by hopes of promotion or by fear of losing his job, he has little motive to incite him to his best endeavor, because, as is well known, in many cases, the good and honest workman receives the same wages as the man who soldiers away his time at the next bench. Under this plan, defective work usually is not penalized except through dismissal when it becomes too common to be tolerated.

One writer has stated that in going through shops and factories for years, he has, almost without a single exception, been able to point out the men who are working by the day and those who are working under some other plan. There is an entirely distinctive atmosphere about their work.

An argument stated in favor of the day or hour rate is that it insures a constant labor cost, and one that is easy to apply. This argument, however, overlooks entirely the fact that uniform labor cost is not uniform cost per article. It might be well to specify some class of wage earners for which a day-rate plan is either desirable or necessary. Examples of this class are firemen, engineers, inspectors, watchmen, bookkeepers, etc., whose work cannot be measured by articles produced; and, usually, such classes of labor as repairmen, inventors, and men who are planning and constructing special machinery must necessarily be based on this plan.

24. Value of Lost Time.—It has been mentioned previously that one of the leaks in labor is that of lost time. That the cost of lost time is an item of importance will be readily seen on referring to Table I, which shows what an average loss of 5 minutes by each employe for each work day of 9 hours, at different rates of wages, will amount to in 1 year.

It must be admitted that 5 minutes a day is an insignificant estimate of the time actually wasted in a day by men working by the time rate. Tests have repeatedly shown that an hour

a day is not an unusual amount of time to be lost by slow work and needless interruptions, while the introduction of the piece-work or premium plans has opened the eyes of many a manager to the fact that a loss of an hour a day is a small estimate when compared with what the men might do if they wished.

As a further illustration of what this loss amounts to in a year, suppose that a factory employs 600 men for 300 10-hour working days a year. In the course of a year, the loss in time would aggregate 180,000 hours; that is, 18,000 days' work that the factory does not get, and for which it pays wages. Taking

TABLE I

VALUE OF LOST TIME

Rate of Wages per Day	Amount of Loss per Year				
	By 1 Employe	By 10 Employes	By 20 Employes	By 50 Employes	By 100 Employes
$1.00	$2.90	$29.00	$ 58.00	$145.00	$290.00
1.25	3.62	36.20	72.40	181.00	362.00
1.50	4.35	43.50	87.00	217.50	435.00
2.00	5.80	58.00	116.00	290.00	580.00
2.50	7.25	72.50	145.00	362.50	725.00
3.00	8.70	87.00	174.00	435.00	870.00

20 cents as a moderate amount per hour, the actual loss in wages paid out would be $36,000. These figures are startling, but they do not overstate the case in many factories of this size.

PIECE-WORK METHOD

25. The **piece-work plan** is a system of paying wages on the basis of the amount of work a workman is capable of doing, the rate being based on past experience or ascertained by test. The employer, after making what he considers a fair estimate, sets a price on the production of an article. Much friction and dissatisfaction often result in the introduction

of this wage system because sufficient thought is not given to the setting of a rate, and often the employer makes a cut.

26. An employer having decided to introduce the piece-work system, first sets out to find out what allowance he should make on each piece of work. After making what he considers a fair allowance for increased production that is due to follow with the new way of working, he waits for results. The rate of production soon shows enormous gains, and, instead of the low per cent. he allowed in discounting the new rate, he finds that production has increased 50 or 60 per cent. or even doubled itself in some cases. As a result, the man who is getting, say $2.75 a day, is soon earning $4 or more in the same time.

The employer may consider, in view of the preceding, that the employe is receiving too much wages, and if he cuts the price, he will usually have trouble with the workman. The workman, on the other hand, in such a case, is liable to reason that if he produces too little, his wages will be small, and if he produces too much, they will be cut. This places him between two fires, the result usually being a limit on his part in production to a certain amount that he might consider safe. In a case of this kind, the piece-work system breaks down and fails to give the desired results.

27. The employes are working for the highest wage for their time, while the employer is working for the largest results for a given wage. This statement is true as soon as the employer shows uneasiness over the amount of wages his workmen are earning. Originally, he must have had in his mind that wages would not rise in the same proportion as production increased, and therefore he fails to see where he is gaining anything by a change in the method of wage system. The workmen, however, consider that they have been trapped by the cut in the piece rate. The first necessary precaution is to set such a rate that can be maintained, for as long as the workmen fear a cut for producing too much they will not produce to their full capacity. Once having accepted a rate, and having confidence in its remaining stationary, regardless of what wage

they may earn, they will try to do their level best, and the result will be maximum production.

The basis of trouble in most cases is due to the fact that the employer in fixing the rate at the start was not aware of what the men could do, and this ignorance has resulted in cutting of rates and arousing such antagonism that now when steps are taken to introduce the piece rate in a factory, it is fought tooth and nail by the men and the foreman. The success of the piece-work plan depends fundamentally on the fixing of a proper rate and one that can be maintained, and as long as the employer bases his calculations on what the workman can earn by working under the day-rate plan, just so long will the piece-rate system be unsuccessful.

28. Some authorities think that no piece rate can be maintained and that cuts are necessary. Nevertheless, if a manufacturer can afford to pay a certain amount for the production of an article, he can surely afford to pay the same amount per article when the workmen are producing more per day; and, if this condition exists, the manufacturer is saving more, for the reason that indirect expenses are distributed over a larger number of articles produced.

For the sake of illustration, let it be assumed that a manufacturer pays \$3 a day to workmen who are turning out an average of 10 articles per day. If 50 per cent. of the direct-labor charge is allowed for overhead expenses and \$1.50 is allowed for material cost of the 10 articles, the total cost of each article will then be $(\$3.00+\$1.50+\$1.50)\div 10$, or 60 cents, of which the direct-labor cost is $\$3.00\div 10$, or 30 cents. Now, assume that he allows the men the full 30 cents per article, an allowance that no employer would ever make, by the way, and see what the expense is when the men increase their product 50 per cent.; that is, to 15 articles per day. The material will now cost \$2.25, and the overhead cost may increase 15 per cent. of what it was, that is, to \$1.725. The cost is now $(\$4.50+\$2.25+\$1.725)\div 15$, or .56½ cents. Thus, a very conservative estimate shows a gain of 3½ cents to the article, with 50 per cent. greater production. An allowance of 25 cents

labor cost per article would be much nearer the actual facts in such a case, in which instance the process would show $51\frac{1}{2}$ cents net cost, or a gain of $8\frac{1}{2}$ cents with 50 per cent. greater production.

The point of all this is, that if the manufacturer has been able to make profits in the first case, he can surely make more in the second, despite the fact that the workmen are earning wages that look large in proportion to the old day rate. To the objection that such a method leads to overproduction or lack of balance in certain departments, it is only to be replied that this can be overcome by dropping inferior workmen or by transferring men from one part of the shop to another. However, the general effect would be to increase sales, since now the manufacturer is in a position to put his goods on the market at a cheaper price and undersell competitors.

29. Where workmen are hurrying to produce the largest number of articles in a given time, it is necessary to have the articles inspected. Otherwise, defective work will become a formidable factor due to haste. The knowledge on the part of the workmen that their work is being inspected and that the part that is rejected will be a total loss to them guards against carelessness and hasty work.

30. When the introduction of the piece-work plan has been decided on and no exact records have been kept of the work of the men, it is necessary to make tests and compile such records. No knowledge of the fact that the workmen are under observation for the purpose of fixing a rate should leak out, for, if a man knows he is being watched, he can easily manage to extend time and in this way deceive any but skilled observers. A separate rate should be fixed for each operation, and the sum of these rates, plus a percentage for unavoidable delays, will determine the total rate to be placed on an article.

31. H. L. Gantt, in "Work, Wages, and Profits," states that the essentials of the piece-work system are:

"First, to have the best expert available investigate in detail every piece of work, and find out the best method and the shortest time for doing it with the appliances to be had.

"Second, to develop a standard method for doing the work, and to set a maximum time which a good workman should need to accomplish it.

"Third, to find capable workmen, who can do the work in the time and manner set, or to teach an ordinary workman to do it.

"Fourth, whenever the high efficiency is obtained, to compensate liberally not only the workman actually doing the work, but also those who supply him with materials and appliances to enable him to maintain the efficiency specified.

"Fifth, to find among the workmen who have learned the best ways of doing work, some that can investigate and teach, and thus gradually to get recruits for the corps of experts, so that the system may be self-perpetuating.

"Sixth, the ordinary foreman of the shop *must not* be called upon to do the work of the expert. His business under the usual conditions of management is that of an executive, and he is invariably so busy attending to his routine duties that he has but little time to make investigations into the best method of doing work. He can only give instructions according to the experience he has had in the past, or according to the knowledge he may pick up at odd times. Again, he frequently feels compelled to allow work to be done inefficiently because he has no man that can do it better, and no time to train a new man. For these reasons it is desirable that the development of improved methods, the setting of tasks in accordance with these methods, and the training of workmen to perform these tasks should be in the hands of some one other than the foreman.

"For this purpose the best expert mechanic available should be selected. Such a man may not have qualities at all fitting him to be a foreman—in fact, the best expert usually makes but a poor foreman. He is generally so absorbed in the mechanical operations themselves that the improvement of them becomes a passion with him, and nothing pleases him more than to see numbers of machines operating at their highest efficiency, the result of his work. On the other hand, the foreman with this kind of a mind often sacrifices other sources of efficiency for this object. The expert must be a good mechanic, with

fair education. He must have industry, originality, persistence, and an ability to remove obstacles, not once, but repeatedly.

"Such an expert in a shop will study the machines individually and teach workmen to bring each up to its highest efficiency."

DIFFERENTIAL-RATE METHOD

32. The **differential-rate plan** is based on the same principles of paying for the product as the piece-work plan. It is really a piece-work method modified by an application of time rate to the work. It offers for the same work a high price for quick time and perfect work, and low pay for slow time and imperfect work.

33. The differential-rate method may be best understood by illustration. Suppose that a workman receives 27 cents per piece, and in a day of 10 hours averages 8 pieces. The employer tells him that as long as he continues to produce 8 pieces every 10 hours that rate will continue; but if he will finish 10 pieces perfectly in the same time, he will be paid 29 cents per piece, and if he succeeds in making 11 perfect pieces he will receive 30 cents per piece. On the other hand, if by reason of slow or imperfect work he is credited with only 7 pieces, his wages will drop to 25 cents per piece. It does not take much imagination to picture that workman extending himself to produce just as much as possible, and at the same time taking great care to see that his work is perfect; for with one piece imperfect and thrown out, his whole scale is lowered and all his hurry has been in vain.

Turning to the employer's side, let us see how he is affected by the different cases just stated. The cost of material may be set down as 10 cents an article, and the overhead cost, as distributed over the number of articles manufactured per day, as $1.50, provided that number is 8. This overhead cost will increase a certain amount with the increased output. Let this be $\frac{1}{15}$, or $6\frac{2}{3}$ per cent., for an increase of 25 per cent. in production. This makes the overhead cost for 10 articles

$1.60. Using this as a base, at a like rate, the overhead cost for 11 articles would be approximately $1.64. It is fair to assume that the 7-piece item was due to imperfect work, which would not influence the indirect expense. Then, the cost of each article to the manufacturer and the different wages of the workman would be as shown in Table II.

It will be noticed at once, in studying this table, that the workman apparently gets the lion's share of the profit resulting from this arrangement. A liberal rate of increase, in conjunction with a very moderate overhead cost, has been chosen here for the purpose of showing that even with these factors against him, the employer still decreases the cost price per piece as production increases. If the overhead cost were $1

TABLE II

ILLUSTRATION OF COST OF MANUFACTURING ARTICLES

Number of Pieces	Price per Piece	Labor Cost	Cost of Material	Overhead Cost	Total Cost	Cost per Piece
7	$ .25	$1.75	$ .70	$1.50	$3.95	$ .56$\frac{3}{7}$
8	.27	2.16	.80	1.50	4.46	.55$\frac{3}{4}$
10	.29	2.90	1.00	1.60	5.50	.55
11	.30	3.30	1.10	1.64	6.04	.54$\frac{10}{11}$

more, as might easily be the case, the difference to him in the cost per piece would be much more noticeable, being 70$\frac{5}{7}$, 68$\frac{1}{4}$, 65, and 64 cents, respectively.

34. One especially good feature connected with this plan is that the poor workman gets poor pay, and the good workman good pay. It also differentiates the class, or grade, of employes more effectively than the other plan. In a plant where the indirect expense, or overhead, is very large compared with the productive labor, it is almost sure to pay; but where the overhead is very small in comparison with the productive labor, the advantage is somewhat uncertain. This system takes especial account of the quality of work as an

integral feature in determining the rate, and suggests the desirability of an inspecting department as part of the system.

35. In summing up the advantages of the differential-rate plan, it may be said that:

1. Wages are raised at the same time that cost is somewhat lowered. It thus promotes better feeling between employer and employe without a loss on the part of either.

2. It improves and holds uniform the quality of work by means of the supervision employed.

3. It succeeds in obtaining the practical maximum of production per unit of time.

4. It automatically sifts out the lazy and incompetent, and raises the whole standard of workmanship in a plant.

The principal disadvantage connected with this wage method lies in the danger of making ill-judged rates at its introduction. The utmost skill and judgment are necessary to the employer who would use it. It also calls for a well-organized supervising corps, the actual increase of cost for this depending entirely on local conditions, the nature of the shop, and the then present organization established there.

PREMIUM METHOD

36. Of all the more modern plans of wage systems, the **premium plan** is perhaps the most in use. It differs from piece-work methods by basing the wages on a time rate instead of product, and then paying extra time for the time saved in the operations. The particular feature about this plan that appeals to most workmen is that it guarantees a minimum wage at least, and it usually results in less opposition on their part to its introduction. It provides for an increase for increased effort.

37. To illustrate the premium plan, suppose that a workman averages a certain amount of work in a day of 10 hours, receiving 28 cents an hour. The premium arrangement provides that if he accomplishes the same work in 9 hours he is to be paid 9×28 cents, or \$2.52, plus a certain sum for the

hour saved, say 14 cents; and then there is still the hour to work and earn more. If he saves 2 hours, he receives 8×28 cents, or \$2.24, plus 2×14 cents, or \$2.52, for 8 hours' work. Now, even if he earns no further premium in the remaining 2 hours, his wages will be \$2.24 plus 2×14 cents plus the wages for the remaining 2 hours at 28 cents per hour, or 56 cents, making a total of \$3.08 for 10 hours' work, instead of the regular pay of \$2.80. Evidently, by thus cutting the time of production 2 hours, he has saved the factory 56 cents, which profit is then divided half and half, or in some other proportion agreed on beforehand. But the employer's profit does not stop with this 28 cents on the product itself. All that has been said before relative to spreading the overhead cost over an increased output applies here, and his profit is 28 cents plus whatever is saved in indirect expense per unit article. So it may be truthfully said of the premium plan that both wages and profits go up, and everybody concerned gains thereby.

38. The advocates of the premium plan claim, also, that it is the most equitable of any plan yet proposed. Given a certain productive increase in a factory, and under the day-rate plan, the employer receives all the benefit; on the other hand, under piece work, all or nearly all the gain goes to the workmen, the employer saving only in the indirect expense. Under this plan the profit is divided more evenly, each side receiving a gain somewhat proportionate to its interests involved.

39. Comparison of All Wage Plans.—Table III shows a comparison of all wage plans discussed in this Section, and it may be explained as follows: Let it be assumed that, in a factory operating under the day-rate system, the men produce 8 articles in a day of 10 hours at 30 cents per hour, and that the costs are to be analyzed as the production increases 25 per cent., or to 10 articles, per day under the stimulus of a new wage system. It is fair to assume that under the piece-work plan the rate would be 32 cents per piece, and under the differential-rate plan, 32 cents each for 8 pieces, and 34 cents each for 10 pieces. Likewise, with the premium plan, let the

TABLE III

COMPARISON OF ALL WAGE PLANS

Wage Method	Number of Articles	Rate of Payment	Labor Cost	Men's Gain per Day	Cost of Material	Overhead Cost	Total Cost	Cost per Article	Reduction in Cost per Article	Reduction in Cost for 100 Articles
Day rate	8	$ .30 per hour	$3.00		$1.00	$1.50	$5.50	$ .6875		
Piece work	8	.32 per piece	2.56		1.00	1.50	5.06	.6325		
	10	.32 per piece	3.20	$ .64	1.25	1.60	6.05	.605	$ .0275	$2.75
Differential rate	8	.32 per piece	2.56		1.00	1.50	5.06	.6325		
	10	.34 per piece	3.40	.84	1.25	1.60	6.25	.625	.0075	.75
Premium	8	.28 per hour	2.80		1.00	1.50	5.30	.6625		
	10	.14 additional for each hour saved	3.15	.35	1.25	1.60	6.00	.60	.0625	6.25
Bonus	8	.28 per hour	2.80		1.00	1.50	5.30	.6625		
	10	.32 per hour	3.20	.40	1.25	1.60	6.05	.605	.0575	5.75

pay be 28 cents per hour, with a premium of 14 cents for each hour saved. It must be noticed that if the workman produces at first 8 articles per day and then 10, he completes his former production in 8 hours and thus saves 2 hours in 8. As the supposition is that his increased rate is constant, this means that his gain in a day of 10 hours is $2\frac{1}{2}$ hours, or 25 per cent., which agrees with his general rate of increase as it should. It may be assumed that the cost of material is $12\frac{1}{2}$ cents per article, and that the overhead cost remains constant at $1.50 per day for a production of 8 articles and increases $\frac{1}{15}$, or $6\frac{2}{3}$ per cent., for an increase of 25 per cent. in production. The increased production is not given for the day-rate system, as it is not likely there would be any, and, if there were, it would all go toward the employer's profit. The results obtained under the bonus system are shown in this table and may be used for future reference. The rate is taken as 28 cents per hour at a production of 8 articles a day, and 32 cents per hour at 10 articles per day.

40. It is instructive, as well as interesting, to change the figures in Table III and see the effect on the different items involved. The effect of distributing the indirect expense over a greater production is again strongly emphasized. If the items in the column headed Overhead Cost are increased, the cost per article will increase in a much slower ratio where the production is 10 articles than where it is only 8; also, the gain on the cost per article increases with the increased overhead cost in every instance. It also exhibits, by changing the items in the column headed Rate of Payment, the limits within which the labor cost may be changed without resulting in an actual increase in the cost per article. Naturally, in a table similarly arranged, taking the data from actual experience in a factory, there would be considerable change in the several items, but it can be confidently asserted that the table, with its results, is relatively true. It then follows that the advocates of the premium plan have a very good basis for the claim that by this way the profits accruing from increased production are more equitably divided between the employer and the labor employed.

BONUS METHODS

41. The **bonus plan,** for encouraging greater effort and skill by means of a sliding scale of wages, is a branch of the premium plan, and is related to it much in the same way that the differential-rate method is related to straight piece-work method. It is based on the same principle of increasing the pay as the time to do a definite amount of work is shortened; but, instead of being calculated directly from the time saved, it takes the form of an increase in the hourly wages for the time actually spent, the rate itself depending on the per cent. of time gained. Thus, on referring to Table III it will be seen that the workman receives 28 cents an hour for producing 8 articles in 10 hours, but that his rate of pay is increased to 32 cents an hour when he raises his production to 10 articles in the same time. Fundamentally, however, the principle is the same as the premium plan, and whatever remarks apply to one plan apply also to the other. They are usually discussed together, and some authorities make no distinction between them, calling the general system by one name or the other, and sometimes both alternately.

42. In introducing the premium or the bonus system, the same caution must be observed as with the piece-work systems. It is essential for the factory owner to be reasonably sure of the speed that can be attained beforehand, or else he may fall into the same error as he who starts out with too high a piece rate. There is this modification, however: even if an error is made on the side of too high a scale, it is a less costly mistake than in piece work. This is clear from the analysis, which shows that the employer is not working on so narrow a margin and that the effects of such an error would be more evenly divided.

One principle relating to the premium rate stands out clearly in establishing the premium or the bonus system. Where there is a good deal of handling of material and very little machine work, it is well to make the rate fairly low, because there will doubtless be a large per cent. increase from the greater effort placed where it has the most effect. However, if the

process is mostly machine work, it will call for a much greater application of skill and labor to effect a large increase, and in this case one can afford to place a higher premium rate to call forth this skill. At best, the increase will be comparatively small in contrast with the more purely manual operations.

There has been considerable difference of opinion as to where the liberality in these methods is to be shown—in the premium rate or in the time rate. The settlement of this question seems to depend mostly on the local conditions in which it is tried. In general, remembering that the increase is going to be beyond expectations, it would seem that liberality with the time rate, coupled with a smaller premium rate, would better safeguard the employer against error. If the premium rate is at first too small, it can easily be raised; but if it is started too high, it cannot be lowered without coming into conflict with the whole body of employes and must end disastrously. However, if the conditions are such that it will call for relatively high skill and much use of brains to effect a comparatively small increase of output, the best policy, apparently, would be to put the emphasis on the premium rate directly.

43. On summing up the principal points concerning the premium and bonus plan, it may be said:

1. In common with piece work, the employe's reward is immediate as compared with other schemes, such as profit sharing and stock distributing. When the psychology of the average shop workman is considered, this impresses one as being no trivial point in its favor.

2. The workman is not confronted with a penalty for not hurrying, beyond the loss of the "bonus," and discharge when he is clearly unfit for his place. The guarantee of a minimum wage renders the installation of the premium system much easier, as it does not arouse such intense antagonism on the part of the men. In this sense, it offers a good transition to the straight piece-work plan, provided that is the goal in view, and all the more because it furnishes accurate and dependable experience in correct rate fixing for the latter step.

3. It gives an excellent incentive for exertion if it is understood that the rate is a fixed one and will not be cut when the employe is producing his utmost.

4. The management does not suffer much loss, if, by chance, there is an overestimation in favor of the employe. Thus, it is much less dangerous to experiment with than piece work.

5. It provides for a more equitable division of profits between employer and employe.

PROFIT-SHARING AND STOCK-DISTRIBUTING METHODS

44. Two other plans looking to increased production and better relations with the labor element of a plant are the *profit-sharing* and *stock-distributing schemes*. Neither has been tried except in isolated instances, and neither is likely to prove of much value unless introduced under peculiar circumstances much different from those found in the average large factory of today.

45. The **profit-sharing method** provides that the workmen shall share in a certain percentage of the profits of the shop as a whole. It is essentially unjust, first, because it possesses the same fault as the day-rate plan in that it does not discriminate between good and poor workmen. Again, the profits or losses of a factory generally depend a great deal on factors clearly outside of the workingman's scope, such as the efficiency of the selling force, business shrewdness in taking contracts, etc. If these result in gains, the workingman has no particularly just claim on the profits thereby derived; and, on the other hand, if these policies result in loss, he would be the first to remonstrate against having to help stand losses for which he is not responsible. In any case, the awards are too far removed in the future to have any effective value in inciting a keen interest in increasing the production.

46. There is only one practical way of handling a profit-sharing plan in a manufacturing industry, and it applies only in certain cases. It consists in setting a price on every article manufactured. The factory is then charged with only such

expenditures as relate directly to its production, and over which the factory management has supervision. Credit is then given to the factory at these scheduled prices for all articles produced, whether they are sold or not. At the end of the year, or when an actual inventory is taken, the factory account in the ledger will show the factory profit and will represent the saving or difference between the actual cost and the schedule prices. The saving, according to this plan, is distributed among the foremen of the various departments and, in some instances, among the employes as well, according to the rate of pay for each. A penalty, of course, is provided for poor attendance, and other penalties of various kinds may be incorporated in the plan according to the conditions under which the plan is operated.

47. The **stock-distributing method** is more likely to be successful in very small shops, in which there are not so many intermediaries between owner and factory hands. In large factories, it is hardly practicable, largely for the same reasons that are given relative to profit sharing.

CLOSING REMARKS

48. Human Element in Wage Plans.—This discussion on wage systems would hardly be complete without some comment on the human element in installing them. There is no department in all business life that so aptly illustrates the saying, "What's one man's meat, is another man's poison." It is hardly too much to say that more depends on the method of installation and the handling of the men than on the merits of the system that is adopted. To be able to handle a large body of workmen, the manager must understand fully, and, broadly speaking, should be in sympathy with the point of view from which his men look at the wage question. Far more is accomplished by tact and judgment in such cases than by any other one element. Especially is this true today, when so many of these schemes have gone down to ruin because of a lack of these qualities. Fully 80 per cent. of the distrust and

opposition to a premium or a piece-work system is the result of failures due to lack of preparation and want of good clear common sense in the methods used during and following the installation. The systems just discussed are all right, on the whole, some being more adaptable to particular conditions than others. The step that remains is to disarm the suspicion of the employes as a class, and to convince them of good faith by meeting them half way in this most vexatious of problems, the adoption of a proper wage plan to bring about increased productive activity.

49. Compilation of Labor Costs.—In the discussion of this phase of the compilation of cost data, it is well to emphasize again the importance of all records relating to labor costs. The importance of this phase of cost accounting has been so fully realized that there are a very large number of firms and corporations manufacturing devices for gathering and compiling labor costs, such, for instance, as the time clocks, time stamps, adding and multiplying and computing machines, and also card systems.

COST ACCOUNTING
(PART 3)

TIME REPORTS

PRINCIPLES RELATING TO TIME REPORTS

1. The manner of reporting the time of workmen on operations has always been a subject of discussion and criticism, and whenever the recording of this information is left in the hands of the operatives without check, discrepancies almost invariably result. Two methods of time reporting may be employed. In one, use is made of mechanical devices, known as time clocks and time stamps, that register the time accurately on cards; and in the other, the time is reported in time books, on time sheets, or on time cards by an employe.

2. Time reports, or the forms on which the time is recorded, may be in the form of either a weekly or a daily report, and a separate report may, if required, be made out for each job or order, whether a fraction of an hour or days are consumed in completing the work.

The time report may be based on any plan of wage system showing not only quantity and time but any other element connected with any particular plan of paying wages.

Where time clocks are not in use, a bound book or loose sheets of a daily or a weekly form may be used and made out by the foreman of each operating department. There are two principles to be considered in devising such time reports: (1) that of having a ticket show the time for one article, order, or process; and (2) that of having a ticket show all orders, articles, or

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processes engaged on during the day; or, a further distinction may be made as to the length of time the report is to be used, that is, whether for a day or for a week. If a time report is part of a cost system, and the time is not summarized on another sheet, the time reports should be provided with columns that show the amount of labor cost applying to each order number, article, or process; however, if the time is summarized either for piece work or for kindred plans of that character, such columns, in certain cases, need not appear.

3. Where piece work is the basic plan of wages, with no premium system being involved, a report should be made showing quantities only; columns may be made for the rate and the amount of pay on the report, or this information may be contained on a separate report or a recapitulation record. The fact that a time report forms the base for inaugurating the piece-work, the premium, or some other system should not be lost sight of in connection with time reports, especially those intended for day workers.

The kind of time report to be devised will depend on the kind of cost system in operation, and should be based on one of two distinct principles. The first of these principles provides for charging the product manufactured and the second for charging the labor against a machine or a process and for ascertaining the cost per hour or per unit of operating the particular machine or process, which machine or process rate is then applied to the order or the product. The base of the charge may be either time or quantity, and the rate may be calculated according to the number of hours that the machine is in operation or to the number of units produced.

4. The following facts should be kept in mind in devising time reports: If the productive-labor method is used in the cost system and the costs for each order are to be obtained, the time reports should be so devised as to indicate the time chargeable to each order. If the costs for each order are not to be obtained as a whole, the time reports should provide for the charge against the article or the product chargeable. Wherever the principle involves machine or process cost, provided

such a system is devised, the order number and the process or machine chargeable should be shown; if no order number is used, the form should be provided with a column that shows the name of the article, as well as the machine number or process chargeable. The wage system in use should also be taken into consideration. If employes are engaged partly on day work and partly on piece work, the form should be devised so as to provide for both classes of work, although a separate form for day work and one for piece work may be used if desirable. Wherever the premium or the differential-rate system of wages is in use, the form should be devised with columns that indicate the data relative to the system in use.

The examples of time reports that follow will serve to illustrate the application of the preceding principles.

EXAMPLES OF TIME REPORTS

5. Perhaps the simplest method of time reporting is that in which the workman makes out his own report on printed

TIME REPORT

Department ---------- Date ----------
Name ---------- Clock No. ----------
Occupation ---------- Room ----------

ORDER NO.	KIND	OPERATION	QUANTITY	TIME	RATE		AMOUNT	

PIECE WORK REPORT

Name ..... Department ..... Date .....
Occupation ..... Clock No. .....
Room .....

ORDER No.	KIND	OPERATION	QUANTITY	RATE	AMOUNT

Quantity O. K. Price O. K. Amount O. K.

FIG. 2

TIME REPORT

Name ..... Department ..... Date .....
Occupation ..... Clock No. .....

DAY WORK

ORDER NO.	KIND	OPERATION	TIME	RATE	AMOUNT

PIECE WORK

ORDER NO.	KIND	OPERATION	QUANTITY	RATE	AMOUNT

Quantity O. K. Price O. K. Amount O. K.

FIG. 3

TIME REPORT

Name _____ Department _____ Week Ending _____

Occupation _____ Clock No. _____

DAY WORK

ORDER NO.	KIND	OPERATION	MON.	TUES.	WED.	THUR.	FRI.	SAT.	TOTAL	RATE	AMOUNT

PIECE WORK

ORDER NO.	KIND	OPERATION	MON.	TUES.	WED.	THUR.	FRI.	SAT.	TOTAL	RATE	AMOUNT

Quantity O.K. Price O.K. Amount O.K.

FIG. 4

weekly use. All time reports in which quantities are shown may be used under certain conditions as production reports, which, when summarized by departments, would represent the production report of a particular department. In all time reports in which only the wages of the workman are shown, the presumption is that the basis of the distribution of indirect expense will be on direct-labor cost.

6. In Fig. 1 is shown a daily time-report blank that may be used for either day-work or piece-work operators, and in Fig. 2 is shown a daily report blank that is suitable for piece-work operators only, because it does not show the amount of time. Fig. 3 shows a daily-report blank that may be employed for reporting either day work or piece work, the same as the blank shown in Fig. 1. It differs from the form in Fig. 1, however, in that it is so divided as to show the day rate and the piece rate in separate sections.

7. Fig. 4 shows a weekly time-report blank to be kept by the workman. This blank, as will be observed, is the same as that shown in Fig. 3, except that it provides for 1 week instead of 1 day.

Fig. 5 shows a weekly time-report blank that is somewhat similar to the one shown in Fig. 4, inasmuch as it would show, when properly filled in, both day work and piece work for a week, provided in both cases that the operator is working on one class of work for which the rate for the whole week is uniform. The main feature of this form of report is that the hours on the production are stated, thus permitting it to be used in connection with the distribution of indirect expenses on the direct-labor-hours and on the machine-rate method. It is intended to be used, however, in cases where an operator is working for 1 week on one machine. As will be observed, the forms shown in Figs. 1 to 4 are designed to carry out the charge against orders that would represent a special-order system; whereas, the form shown in Fig. 5, inasmuch as it does not contain the order number, is intended to be used where the process or the product cost system is in operation.

TIME REPORT

Department _____ Week ending _____ 19____

Name _____ Clock No. _____

Occupation _____ Machine No. _____ Operation _____

DESCRIPTION OF WORK		MON.	TUES.	WED.	THUR.	FRI.	SAT.	TOTAL	RATE		AMOUNT	
	Production											
	Hours											
	Production											
	Hours											
	Production											
	Hours											
	Production											
	Hours											
	Production											
	Hours											
	Production											
	Hours											
	Production											
	Hours											

Quantity O. K. _____ Price O. K. _____ Amount O. K. _____

FIG 5

TIME REPORT

Name _____ _____ Department Date _____

Occupation _____ Clock No. _____

PRODUCTION						TIME			COST	
ORDER No.	ARTICLE	OPERATION	MADE	DEFECTIVE	GOOD	BEGUN	FINISHED	HOURS	RATE	AMOUNT

Approved: _____ Correct: _____

FIG. 6

TIME REPORT

_____ Department

Name _____ Week ending _____ 19____

Occupation _____

PRODUCTION					TIME			CHARGE		
DATE	ARTICLE	MADE	DEFECTIVE	GOOD	BEGUN	FINISHED	HOURS	ORDER No.	MACHINE No.	PROCESS

_____ Correct: _____

FIG. 7

8. Fig. 6 illustrates a daily time-record blank that is designed to show the quantity of production, the time, and the cost. The distinctive feature of this report, differing from those described previously, is that provision is made to show the class of production. In the column headed Made would be shown the total production; in that headed Defective, the number defective; and in that headed Good, the number of perfect articles. The addition of the defective and the good make the total in the column headed Made. All time reports in which a column is provided for the order

THIS SIDE OUT
No. 275
NAME

FIG. 8

WEEK ENDING ..... 190.....
No. 275
NAME

DAY	MORNING		AFTERNOON		OVERTIME		TOTAL
	IN	OUT	IN	OUT	IN	OUT	
MON	M 6 50	M 12 02	M 1 30	M 6 03			
TUE.	TU 7 01	TU 12 13	TU 12 45	TU 6 01			
WED	W 6 45	W 12 05	W 1 01	W 6 00	W 7 00	W 10 05	
THU	TH 6 55	TH 12 01	TH 12 50	TH 6 05			
FRI.	FR 9 30	FR 12 00	FR 12 58	FR 6 10			
SAT	SA 6 40	SA 10 45	SA 12 59	SA 5 59			
SUN							

TOTAL TIME .....HRS.
RATE .....
TOTAL WAGES FOR WEEK .....

FIG. 9

number would indicate that a number of different order numbers may be worked on in the course of a day by a workman. If the order number is placed at the head of the report and no column is provided, it would indicate that only one order number could be used on that particular form.

The blank shown in Fig. 7 belongs to the same class as the one shown in Fig. 5. However, it may be used for a special-order system. It is ruled the same as the blank in Fig. 6, with the exception that the three columns at the right show the disposition of the charge. This style of form is employed

where different cost-finding methods are in use in one plant; that is, the cost by order, by machine, or by process may be obtained from this one form.

9. Figs. 8 and 9 illustrate the front and the back, respectively, of an ordinary form used in a clock register, the back showing, in the proper spaces, the entering and leaving time of the employe, as registered by punching the clock. This form may be used as an organization form or as the report of non-productive workmen; it is, of course, of no value for making direct labor charges against either article or product.

OPERATOR No.		PIECE No.			ORDER No.		
MAKE		DATE FINISHED					
DESCRIPTION OF JOB							
DAY	ON	OFF	HRS.	RATE	DOLS.	CTS.	
WED.							
THU.							
FRI.							
SAT.							
SUN.							
MON.							
TUE.							
ENTERED ON COST CARD							
COUNTED AND APPROVED BY INSPECTOR							

	1	2	3	4	5	6	7	8	9	0
THOUSAND										
HUNDRED										
TEN										
UNIT										

FIG. 10

10. Fig. 10 shows a form, or blank, used in a special-order system. On this report the production is stated as a whole for the week and checked by an inspector.

11. In Fig. 11 is shown an ordinary form that is employed where the machine is the basis of the cost finding and where a premium system is in use. The particular specifications on this form provide for the day-work rate, the premium allowed, and the piece-work rate, as well as the drawing number and the factory order number.

12. In Fig. 12 is shown a form that is used in a special-order cost system in which a time-stamp device is in use. This particular form represents a machine-shop record. At the top

of the form, to the right, it shows the date, the job number, the workman's number. At the left it shows the time that work

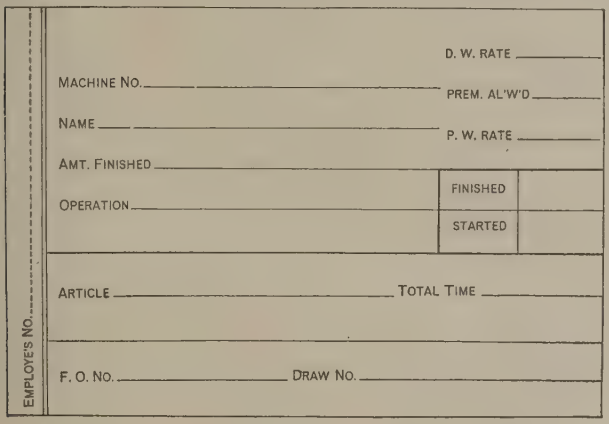

Fig. 11

is commenced and the time that is employed on a single operation, all of the operations being printed on the card. Only one card can be used on a single operation, for which reason it

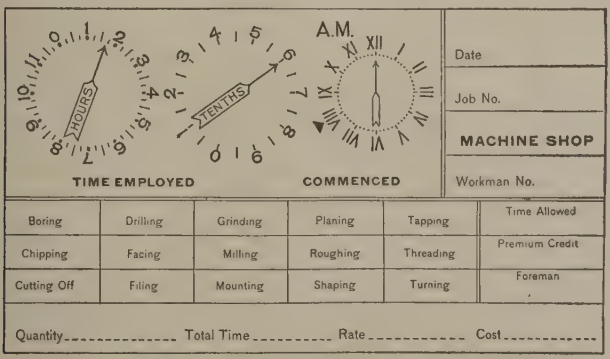

Fig. 12

is used in plants where, in most cases, the workmen are employed on a single operation during the whole day. The

TIME CARD

P. R._____ D. R._____

Clock No._____ Date_____

Name_____ Dept._____

Time		Order No.	Oper. No.	Production			Rate	Amount	√
Units	H. & M.			Total	Def.	Good			
	7:00								
1	05								
2	10								
3	15								
4	20								
5	25								
6	30								
7	35								
8	40								
9	45								
10	50								
11	55								
12	8:00								
13	05								
14	10								
15	15								
16	20								
17	25								
18	30								
19	35								
20	40								
21	45								
22	50								
23	55								
24	9:00								
25	05								
26	10								
27	15								
28	20								
29	25								
30	30								
31	35								
32	40								
33	45								
34	50								
35	55								
36	10:00								
37	05								
38	10								
39	15								
40	20								
41	25								
42	30								
43	35								
44	40								
45	45								
46	50								
47	55								
48	11:00								
49	05								
50	10								
51	15								
52	20								
53	25								
54	30								
55	35								
56	40								
57	45								
58	50								
59	55								
60	12:00								
		Totals							

NOTE.—When job is complete, check thus: √ in last column.

O. K._____ Inspector. O. K._____ Foreman.

FIG. 13

JOB-PRESS TIME TICKET

Date_____ 191__ Press No _____

Foreman's O. K._____

Under Kind of Work always use the following abbreviations in filling out this ticket.

C.	Cleaning Press.	W. B.	Waiting for repairs to belt of press.	W. P.	Waiting for pressman.
I.	Idle.	W. C. C.	Waiting for corrections by Compositor.	W. O. K.	O. K. (State where O. K. comes from.)
M. R.	Make Ready.	W. D.	Waiting for sheets to dry.	W. S.	Waiting for Stock.
R.	Running.	W. E.	Waiting for engraver on form.	WASH.	Washing up.
R. D.	Racked.	W. F.	Waiting for form.		
S. S.	Slip-Sheeted. (Give number of employe doing slip sheeting alongside the letters S. S.)	W.FEED.	Waiting for feeder.		

		Job Name and Number	Pressman Feeder	Quantity on Job	Quantity Run Off	Kind and Quantity of Ink Used	Kind of Work
	7:45						
1	7:50						
2	7:55						
3	8						
4	8:05						
5	8:10						
6	8:15						
7	8:20						
8	8:25						
9	8:30						
10	8:35						
11	8:40						
12	8:45						
13	8:50						
14	8:55						
15	9						
16	9:05						
17	9:10						
18	9:15						
19	9:20						
20	9:25						
21	9:30						
22	9:35						
23	9:40						
24	9:45						
25	9:50						
26	9:55						
27	10						
28	10:05						
29	10:10						
30	10:15						
31	10:20						
32	10:25						
33	10:30						
34	10:35						
35	10:40						
36	10:45						
37	10:50						
38	10:55						
39	11						
40	11:05						
41	11:10						
42	11:15						
43	11:20						
44	11:25						
45	11:30						
46	11:35						
47	11:40						
48	11:45						
49	11:50						
50	11:55						
51	12						
52	12:05						
53	12:10						
54	12:15						
55	12:20						
56	12:25						
57	12:30						
	12:35						
	12:40						
	12:45						
	12:50						
	12:55						
	1						
58	1:05						
59	1:10						
60	1:15						
61	1:20						
62	1:25						
63	1:30						
64	1:35						
65	1:40						
66	1:45						
67	1:50						
68	1:55						
69	2						
70	2:05						
71	2:10						
72	2:15						
73	2:20						
74	2:25						
75	2:30						
76	2:35						
77	2:40						
78	2:45						
79	2:50						
80	2:55						
81	3						
82	3:05						
83	3:10						
84	3:15						
85	3:20						
86	3:25						
87	3:30						
88	3:35						
89	3:40						
90	3:45						
91	3:50						
92	3:55						
93	4						
94	4:05						
95	4:10						
96	4:15						
97	4:20						
98	4:25						
99	4:30						
100	4:35						
101	4:40						
102	4:45						
103	4:50						
104	4:55						
105	5						
106	5:05						
107	5:10						
108	5:15						
109	5:20						
110	5:25						
111	5:30						
112	5:35						
113	5:40						
114	5:45						
115	5:50						
116	5:55						
117	6						

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FIG. 14

object of printing all the operations on this one form is to provide a uniform card for all workmen, each workman being obliged to check the operation upon which he is employed during the day. This style of form, or blank, may also be used where a premium system is in use.

13. Fig. 13 shows one side of a report blank that is designed for use with a special-order system that is based on what is known as the *unit plan* of time recording. The hour is divided into twelve units of 5 minutes each, and when computing time units are considered instead of hours and minutes. For use in connection with this time report, tables having the values of any number of units worked out for the various rates per hour, per week, or per day, are prepared in advance. The several headings on this time card, with perhaps the exception of P. R. and D. R. are self-explanatory; P. R. and D. R. indicate whether operatives are employed on day work or on piece work. Time is recorded by merely drawing a line through the nearest unit of time when beginning and stopping work on a job. One card serves for a full working day and may be designed to cover overtime as well. It is printed on two sides—one for morning, the other for afternoon. Units for morning run consecutively from 1 to 60, beginning at 7 05 and ending at 12 o'clock. For afternoon, units begin with 61 at 1:05 and end with 120 at 6 o'clock. The number of units and the time to be shown are regulated according to working time in each plant. It is of no consequence, so far as the operating plan is concerned, whether the hour is divided into units of 5, 6, 10, or 15 minutes.

14. Fig. 14 shows a time-report blank that is devised on exactly the same lines as the one shown in Fig. 13, but with particular reference to the printing business, for which it is quite generally used. It is printed on one side only. Kind of Work varies somewhat in different plants, and abbreviations with their explanations are arranged to suit individual needs.

15. In Fig. 15 is shown one of several time-report blanks designed especially for use on a patented time-keeping machine,

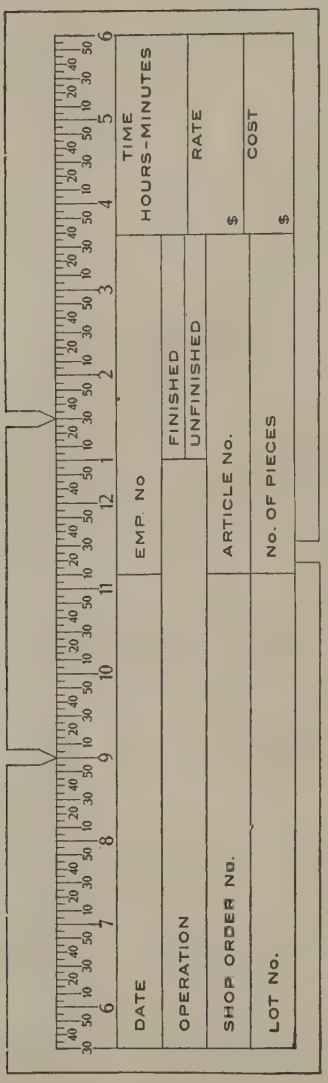
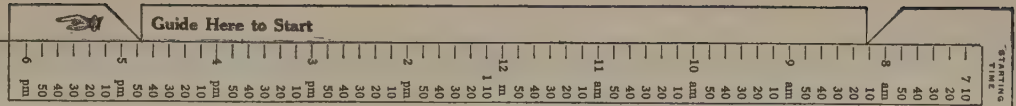


Fig. 15

which, by an arrangement in the form of a moving guide, cuts out starting or stopping time in the wider margin, as shown. The machine is so constructed that lunch time may be eliminated if desired when making the record. With the machine are furnished tables by which the elapsed time and the amount earned on the job are found instantly. One card is used for each job.

16. Figs. 16 and 17 illustrate the front and the back, respectively, of a card employed in connection with a machine similar to that described for use with the style of card shown in Fig. 15. This machine, however, records the starting and the elapsed time by means of notches. No rate tables are required, the back of the card (Fig. 17) having printed on it a table of rates and earnings; also, at the junction of the line showing elapsed time with a column indicating hourly rate is found the exact amount earned. Only one order number is cared for on the form shown, but it may be



DEPT. No. _____ **JOB TICKET** Expense Charge _____

DATE _____ Time Limit _____

EXPENSE ORDER	SHOP ORDER	ACCOUNT	TIME	RATE	AMOUNT

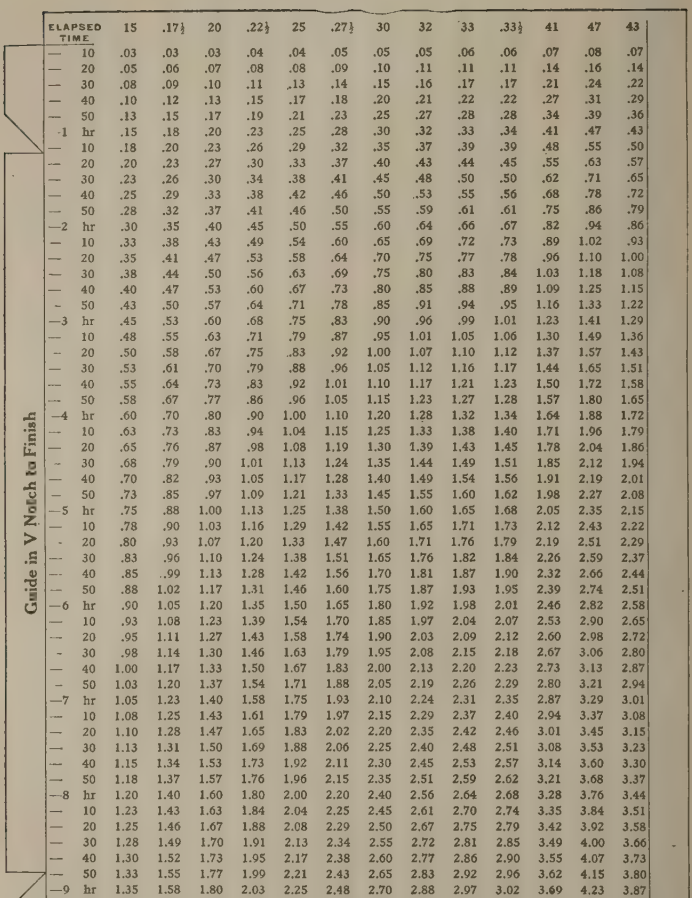
Workman's Name No.

Operation No.

Remarks

(OVER)

FIG. 16



ELAPSED TIME	15	.17½	20	.22½	25	.27½	30	32	33	.33½	41	47	43
— 10	.03	.03	.03	.04	.04	.05	.05	.05	.06	.06	.07	.08	.07
— 20	.05	.06	.07	.08	.08	.09	.10	.11	.11	.11	.14	.16	.14
— 30	.08	.09	.10	.11	.13	.14	.15	.16	.17	.17	.21	.24	.22
— 40	.10	.12	.13	.15	.17	.18	.20	.21	.22	.22	.27	.31	.29
— 50	.13	.15	.17	.19	.21	.23	.25	.27	.28	.28	.34	.39	.36
1 hr	.15	.18	.20	.23	.25	.28	.30	.32	.33	.34	.41	.47	.43
— 10	.18	.20	.23	.26	.29	.32	.35	.37	.39	.39	.48	.55	.50
— 20	.20	.23	.27	.30	.33	.37	.40	.43	.44	.45	.55	.63	.57
— 30	.23	.26	.30	.34	.38	.41	.45	.48	.50	.50	.62	.71	.65
— 40	.25	.29	.33	.38	.42	.46	.50	.53	.55	.56	.68	.78	.72
— 50	.28	.32	.37	.41	.46	.50	.55	.59	.61	.61	.75	.86	.79
—2 hr	.30	.35	.40	.45	.50	.55	.60	.64	.66	.67	.82	.94	.86
— 10	.33	.38	.43	.49	.54	.60	.65	.69	.72	.73	.89	1.02	.93
— 20	.35	.41	.47	.53	.58	.64	.70	.75	.77	.78	.96	1.10	1.00
— 30	.38	.44	.50	.56	.63	.69	.75	.80	.83	.84	1.03	1.18	1.08
— 40	.40	.47	.53	.60	.67	.73	.80	.85	.88	.89	1.09	1.25	1.15
— 50	.43	.50	.57	.64	.71	.78	.85	.91	.94	.95	1.16	1.33	1.22
—3 hr	.45	.53	.60	.68	.75	.83	.90	.96	.99	1.01	1.23	1.41	1.29
— 10	.48	.55	.63	.71	.79	.87	.95	1.01	1.05	1.06	1.30	1.49	1.36
— 20	.50	.58	.67	.75	.83	.92	1.00	1.07	1.10	1.12	1.37	1.57	1.43
— 30	.53	.61	.70	.79	.88	.96	1.05	1.12	1.16	1.17	1.44	1.65	1.51
— 40	.55	.64	.73	.83	.92	1.01	1.10	1.17	1.21	1.23	1.50	1.72	1.58
— 50	.58	.67	.77	.86	.96	1.05	1.15	1.23	1.27	1.28	1.57	1.80	1.65
—4 hr	.60	.70	.80	.90	1.00	1.10	1.20	1.28	1.32	1.34	1.64	1.88	1.72
— 10	.63	.73	.83	.94	1.04	1.15	1.25	1.33	1.38	1.40	1.71	1.96	1.79
— 20	.65	.76	.87	.98	1.08	1.19	1.30	1.39	1.43	1.45	1.78	2.04	1.86
— 30	.68	.79	.90	1.01	1.13	1.24	1.35	1.44	1.49	1.51	1.85	2.12	1.94
— 40	.70	.82	.93	1.05	1.17	1.28	1.40	1.49	1.54	1.56	1.91	2.19	2.01
— 50	.73	.85	.97	1.09	1.21	1.33	1.45	1.55	1.60	1.62	1.98	2.27	2.08
—5 hr	.75	.88	1.00	1.13	1.25	1.38	1.50	1.60	1.65	1.68	2.05	2.35	2.15
— 10	.78	.90	1.03	1.16	1.29	1.42	1.55	1.65	1.71	1.73	2.12	2.43	2.22
— 20	.80	.93	1.07	1.20	1.33	1.47	1.60	1.71	1.76	1.79	2.19	2.51	2.29
— 30	.83	.96	1.10	1.24	1.38	1.51	1.65	1.76	1.82	1.84	2.26	2.59	2.37
— 40	.85	.99	1.13	1.28	1.42	1.56	1.70	1.81	1.87	1.90	2.32	2.66	2.44
— 50	.88	1.02	1.17	1.31	1.46	1.60	1.75	1.87	1.93	1.95	2.39	2.74	2.51
—6 hr	.90	1.05	1.20	1.35	1.50	1.65	1.80	1.92	1.98	2.01	2.46	2.82	2.58
— 10	.93	1.08	1.23	1.39	1.54	1.70	1.85	1.97	2.04	2.07	2.53	2.90	2.65
— 20	.95	1.11	1.27	1.43	1.58	1.74	1.90	2.03	2.09	2.12	2.60	2.98	2.72
— 30	.98	1.14	1.30	1.46	1.63	1.79	1.95	2.08	2.15	2.18	2.67	3.06	2.80
— 40	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.13	2.20	2.23	2.73	3.13	2.87
— 50	1.03	1.20	1.37	1.54	1.71	1.88	2.05	2.19	2.26	2.29	2.80	3.21	2.94
—7 hr	1.05	1.23	1.40	1.58	1.75	1.93	2.10	2.24	2.31	2.35	2.87	3.29	3.01
— 10	1.08	1.25	1.43	1.61	1.79	1.97	2.15	2.29	2.37	2.40	2.94	3.37	3.08
— 20	1.10	1.28	1.47	1.65	1.83	2.02	2.20	2.35	2.42	2.46	3.01	3.45	3.15
— 30	1.13	1.31	1.50	1.69	1.88	2.06	2.25	2.40	2.48	2.51	3.08	3.53	3.23
— 40	1.15	1.34	1.53	1.73	1.92	2.11	2.30	2.45	2.53	2.57	3.14	3.60	3.30
— 50	1.18	1.37	1.57	1.76	1.96	2.15	2.35	2.51	2.59	2.62	3.21	3.68	3.37
—8 hr	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.56	2.64	2.68	3.28	3.76	3.44
— 10	1.23	1.43	1.63	1.84	2.04	2.25	2.45	2.61	2.70	2.74	3.35	3.84	3.51
— 20	1.25	1.46	1.67	1.88	2.08	2.29	2.50	2.67	2.75	2.79	3.42	3.92	3.58
— 30	1.28	1.49	1.70	1.91	2.13	2.34	2.55	2.72	2.81	2.85	3.49	4.00	3.66
— 40	1.30	1.52	1.73	1.95	2.17	2.38	2.60	2.77	2.86	2.90	3.55	4.07	3.73
— 50	1.33	1.55	1.77	1.99	2.21	2.43	2.65	2.83	2.92	2.96	3.62	4.15	3.80
—9 hr	1.35	1.58	1.80	2.03	2.25	2.48	2.70	2.88	2.97	3.02	3.69	4.23	3.87
— 10	1.38	1.60	1.83	2.06	2.29	2.52	2.75	2.93	3.03	3.07	3.76	4.31	3.94
— 20	1.40	1.63	1.87	2.10	2.33	2.57	2.80	2.99	3.08	3.13	3.83	4.39	4.01
— 30	1.43	1.66	1.90	2.14	2.38	2.61	2.85	3.04	3.14	3.18	3.90	4.47	4.09
— 40	1.45	1.69	1.93	2.18	2.42	2.66	2.90	3.09	3.19	3.24	3.96	4.54	4.16
— 50	1.48	1.72	1.97	2.21	2.46	2.70	2.95	3.15	3.25	3.29	4.03	4.62	4.23
—10 hr	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.20	3.30	3.35	4.10	4.70	4.30

FIG. 17

DAILY TIME TICKET

Dept. _____ Clock No. _____

Date _____ Name _____

TIME RECORD	ELAPSED TIME H	ELAPSED TIME M	ORDER NUMBER	OPERATION No.	MACHINE No.	PRODUCTION Fin. O. K.	PRODUCTION Damaged	PRODUCTION Bad	PIECE WORK Rate	PIECE WORK Amount	DAY WORK Rate	DAY WORK Amount	OFFICE USE ONLY Productive	OFFICE USE ONLY Non-Prod.
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
STOP														
START														
TOTAL TIME			Correct: _____ Inspt. _____ Foreman			TOTALS								

Each Job Must Show Time Started and Finished. Total Must Agree With Time Clock.
No More Time Allowed Than Accounted for on Time Cards.

FIG. 18

NAME CLOCK No.

Dept. E. MACH. No. RATE PAY OFF O

TIME	ELAPSED TIME	ORDER No. AND AMOUNT	PART AND OPERATION	QUANT. ORD'RD.	QUANT. MADE
OFF		ORDER No.	Part		
ON		AMOUNT	Opern.		
OFF		"	Part		
ON		"	Opern.		
OFF		"	Part		
ON		"	Opern.		
OFF		"	Part		
ON		"	Opern.		
OFF		"	Part		
ON		"	Opern.		
OFF		"	Part		
ON		"	Opern.		
OFF		"	Part		
ON		"	Opern.		
OFF		"	Part		
ON		"	Opern.		
TOTAL TIME		CORRECT			

FOREMAN

FIG. 19

NAME	No.	RATE

1 Folding	17 Feeding Cylinder	33 Distribution
2 Gathering	18 Feeding Jobber	34 Make Up
3 Paste Plates	19 Paste Covers	35 Foundry Lockup
4 Collating	20 Cut H'd & Side	36 Make Ready
5 Inserting	21 Tableting	37 Press Numbering
6 Smashing	22 Slicing Pads	38 Changing
7 Sewing	23 Wire Stitching	39 Setting
8 Cutting Book	24 Punching	40 Indexing
9 Rounding & Backing	25 Eyeleting	41 Cleaning Press
10 Lining Up	26 Bdy. Numbering	42 Washing Up
11 Casing In	27 Paging	43 Waiting
12 Cloth Cutting	28 Original Comp. Hand	44 Packing
13 Board Cutting	29 Original Comp. Mach.	45 Wrapping
14 Case Making	30 Office Corrections	46
15 Stamping	31 Author's Corrections	47
16 Gilding	32 Office Corrections	48 Idle

MONTH	DAY
1 2 3 4 5 6	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 8 9 10 11 12	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

JOB No.	OPER.	START	STOP	ELAPSED TIME	AMOUNT
TOTALS					

In Case of Idle or Waiting Time State Particulars on Back of This Card

FIG. 20

devised to care for a whole day, in which case tables are required in order to ascertain elapsed time and earnings.

17. In Fig. 18 is illustrated a time-report blank on which the date, the hour, and the minutes are recorded by electrically controlled time stamps. This form will care for eleven different jobs during one day. The starting time is recorded on the lower line in each section and the stopping time on the upper line; this plan is followed in order that subtraction may be readily made for the extension of elapsed time in the column provided therefor. This form presupposes payment by both piece-rate and day-rate plans in the same plant and the use of records in connection with operation of the several machines employed.

18. Fig. 19 shows another form designed for use on the same kind of time-keeping device as is employed with the form shown in Fig. 18. The make-up of the body of the card shown in Fig. 19 is radically different from that of the preceding card, but very much the same data is provided for. The small Pay-Off circle on this card is designed as a safeguard against overpayment. The paymaster will not make final settlement with a man quitting or being laid off preceding the end of a pay period until he receives the time card containing the foreman's check mark in the circle and the foreman's signature at bottom as notice of termination of service and authority to pay.

19. Fig. 20 illustrates a time-record blank employed in the publishing business. It provides for the listing of the usual operations required in printing and binding. In individual plants, however, the operations are varied according to the equipment and the character of output. The various operations are listed and numbered, and record of the character of work done is made in the operation column by number. Dates are shown either by marking or by punching out the month and the day shown in bottom portion of the card.

DISTRIBUTION OF INDIRECT EXPENSES

DIRECT-LABOR-COST METHOD

20. By reason of its simplicity, the **direct-labor-cost method** of distributing indirect expenses is in more general use than any other. It is based on the principle that the product increases in value according to the amount of labor added to this product, and that the greater the amount of labor involved in the manufacture, the greater the expense required to supervise this labor and conduct the business.

This principle, considered as a general one, is true within the limits of its operation, but whether or not it covers the whole field is seriously questionable. There are many other factors in production besides labor, and these are frequently of such prominence that they dominate, or characterize, the situation. This fact accounts for many of the faults and inaccuracies that arise in carrying out the theory by the plan ordinarily adopted. While it is true that the labor involved in the manufacture of a product regulates to a large extent the expense incurred, it is equally true that the principle should not be applied to concrete instances in a general or an inclusive way.

21. The plan generally adopted in operating the direct-labor-cost method is, first, to ascertain the total cost of direct labor actually charged to the product. The total indirect expense for the same period is then divided by the total direct labor. The result shows the per cent., or rate, that the indirect expenses bear to the total productive labor. The distribution is then made over the articles manufactured during the period embraced in the calculations by multiplying the total labor charged to each article by the per cent., or rate, of the indirect expenses. In this way, as will be seen, each article will be charged with a part of the indirect expense of the entire plant, according to the cost of labor expended in its manufacture.

To illustrate, let it be assumed that during a certain month the money spent for direct labor amounts to $8,000, and that for the same period the indirect expenses amounts to $5,000. On dividing the indirect expense by the direct labor, it will be found that the result is $62\frac{1}{2}$ per cent.; that is, the indirect expenses amount to $62\frac{1}{2}$ per cent. of the direct labor of the entire plant. Thus, if the labor cost of an article is known to be $1.20 and the cost of the material 50 cents, the total factory cost of the article would be 50 cents plus $1.20 plus $62\frac{1}{2}$ per cent. of $1.20, making the total cost of the article $2.45.

22. It is clear from the preceding that if the percentage is added to the cost of every article, all this indirect expense, amounting to $5,000, will necessarily be distributed among the articles manufactured and included in the cost. The question remains, however, Is the distribution accurate? In other words, Can an average rate be applied to all articles alike and results be obtained that will be correct for individual articles? The answer depends largely on conditions.

Let it be assumed that a factory has several departments that differ among themselves in process and equipment. It is almost certain that some of these departments are subject to indirect expenses that bear no relation to any of the other departments. Let it be further assumed that the product manufactured embraces a number of articles, some of which pass through all departments and others through certain departments only. It is quite clear that, if the per cent. of indirect expense is ascertained in each of these departments separately, some will show a considerably larger rate than others. Consequently, if an average rate is used for the entire plant, instead of a separate rate for each department, some articles will be charged with an excessive amount and others will not receive their due share of the indirect expenses actually incurred in their manufacture.

As can be seen, the direct-labor-cost method, as generally used, makes no allowance for differences in departmental conditions; also, where these differences actually exist, part of the extra cost in certain departments is shifted to the product

manufactured in departments where the expenses are smaller in amount, and possibly different in character. All this means that an average rate for an entire plant can be used in distributing indirect expenses only where the conditions are extremely simple; that is, the product must be limited to a small variety of articles and the time and labor cost expended on each must be relatively the same in all departments.

23. Another element that is neglected in the plan as described is the difference in the wages paid to skilled and unskilled workmen. It is not necessary that the wages be proportional to the true indirect expenses. The product turned out by a $2-a-day workman sometimes incurs just as much indirect expense as that in the hands of a man who receives $3 or $3.50 a day, the time expended being the same in each case That the latter article should be charged with 50 per cent. or more indirect expense than the former is, of course, wrong; yet this is a possible occurrence when the plan is applied over too many units of production.

An exaggerated form of this inequality of charges is brought to notice when a low-priced workman is placed at an expensive machine and a high-priced workman at a cheap machine. Here, the product of the cheap machine is ridiculously overcharged, and the product of the expensive machine proportionately undercharged, owing to the fact that the plan of distribution is based on the cost of labor and uses an average rate.

24. Suppose, for example, that a manufacturer finds he cannot meet competition on certain articles without reducing the cost of their manufacture or else paying a loss out of the profit derived from the production and sale of other articles. If he accepts the results of this method as a definite statement of costs, and believes his costs to be accurate, he is confronted with a problem that, from the information obtainable, seems impossible of solution from a practical standpoint. It might be supposed that the proper thing to do would be to lower the labor cost by cutting wages or by hiring cheaper workmen, and that in so doing he would save the difference in wages and, besides, the cost of these articles would be burdened with

a smaller part of the indirect expenses. However, it would be absurd to act on such a suggestion, because lowering the wages of the men has not the slightest influence on the true indirect expenses, and the hiring of cheaper workmen would, in all probability, only serve to make them greater at the very point where they would be shown to have decreased.

25. It is apparent that there must be someting vitally wrong with such a system of figuring costs. As before stated, the trouble lies in the average rate, which makes it necessary to overcharge some articles and to undercharge others. Any factory using an average rate based on wages is obtaining results inaccurate in proportion to: (1) the inequality of conditions relating to wages; (2) the differences existing in the equipment and the fixed charges relating to it; and (3) the differences in the time expended on different articles of the same class.

If a system based on wages is to be used, to distribute the indirect expenses equitably, the wages must represent the true conditions of production, and must be proportionate to the true cost. But this occurs only where the labor is practically uniform throughout as to product and wages and time of operation. In rare instances, the cost of labor might vary in the different parts of a factory in proportion to the other elements of cost, and, if such were the case, an average rate would give sufficiently accurate results, any slight error being compensated for by the simplicity and saving of time inherent in the method itself.

While it has been shown that accurate results can be obtained in only a few cases where an average rate of distribution over the plant as a whole is used, it must be kept in mind that if this method of distribution is calculated departmentally, the objections that have been so strongly emphasized will very often disappear and the results will be all that can be desired.

26. In Fig. 21 is shown a statement of factory expenditures that will serve to illustrate the manner in which the department charges in the direct-labor-cost method are classified and arranged in shape suitable for application. Under

STATEMENT OF FACTORY EXPENDITURES

For the month of _____ 19__

Accounts	Department 1	2	3	4	5	6	7	Total
Direct -								
Material	5 160 80	42 38	584 12	3 046 32			110 30	8 833 92
Labor	4 018 38	292 94	1 370 80	2 867 98	1 093 66	412 70	870 04	10 926 40
Total	9 175 18	335 32	1 904 92	5 914 30	1 093 66	412 70	980 34	19 760 32
Indirect -								
Labor	581 78	197 02	536 52	268 94				1 584 26
Supervision	312 42	8 50	170 50	190 22	59 34	24 64	200 82	776 44
Supplies	578 96	3 26	71 52	126 72	108 96	292 84	80 16	1 323 42
Light, Heat and Power	2 890 40	37 48	129 48	230 00	71 80	180 18	84 64	3 623 92
Freight, Express & Cartage (Inward)	22 44	3 06	10 62	18 60	5 88	2 46	7 02	70 32
Maintenance	1 303 10	177 22	616 72	1 095 36	341 86	142 90	407 68	4 084 84
Incidentals			64 10			45 80		110 00
Depreciation	849 86		288 08	566 18	94 36	94 36		1 887 24
General Operating Expenses	803 67	58 58	274 16	573 69	218 73	82 54	176 38	2 187 25
Total	7 612 08	485 72	2 101 64	3 118 97	860 93	865 32	963 30	16 107 81
Total Expenditures								35 842 63
Material-Finished and in Process (beginning of period)								49 444 98
Grand Total								85 287 61
Cost of Sales								35 790 06
Material-Finished and in Process (end of period)								49 497 55

Store Room

Operations	Amount
Inventory (beginning of period)	28 173 58
Purchases	19 162 66
Total	48 336 16
Delivered to Operating Depts	8 898 92
Inventory of Raw Material at end of period	36 437 24

Operating Expenses

Account	Amount	Total
Superintendence		184 92
General Labor		907 19
Light, Heat and Power		136 28
Insurance		375 14
Taxes		245 83
Freight, Express & Cartage (Inward)		109 45
Factory Supplies		16 21
Salaries of Factory Office Clerks		115 00
Factory Office Supplies		10 78
Incidentals		87 16
Total		2 187 25

Distribution

Departments	%	Amount
No 1	20	803 67
2	20	58 58
3	20	274 16
4	20	573 69
5	20	218 73
6	20	82 64
7	20	176 38
Total		2 187 25

APPROVED·

CORRECT·

FIG. 21

the heading Accounts are placed the names of the several departments, and the different items of expenses are listed at the left of the sheet. The account of general operating expenses, covering the indirect expenses of the plant at large, is shown in the lower section of the statement, and the distribution of these expenses is recorded at the right. The per cent., or rate, of distribution, determines the actual amount for each department. The items found in this part of the distribution blank are seen again in the upper form, each placed in the proper department on the line designated as General Operating Expenses.

DIRECT-LABOR-HOURS METHOD

27. The difference between the **direct-labor-hours method** and the method just described lies in the basis used in determining the rate of distribution; otherwise, there is a general similarity in outline and application. Both are averaging methods, and the theory of the labor-hours method admits the principle before stated, namely, that an article increases in value in proportion to the amount of labor expended on it. However, in this method, it is contended that *time*, and not cost, is the essence of the amount of labor, and that the actual cost for the time is merely incidental, or, at most, proportional; that is to say, the indirect expenses of a plant are in keeping with the number of employes and the hours they work, rather than with the wages they receive.

28. The plan of procedure in the labor-hours method is to divide the total indirect expenses by the number of productive hours—that is, the hours charged to the product direct—and thus ascertain the amount per hour to be added to the cost of the product to cover indirect expenses. If, in the example given to illustrate the operation of the labor-cost method, the hours charged to the product during the month had been 40,000, and the indirect expenses $5,000, the rate per hour to be added to the cost would be $12\frac{1}{2}$ cents. Again, if the article referred to had required 4 hours in the process of manufacture, its cost would have been 50 cents for the material, $1.20 for

the labor, and 12½ cents for each hour consumed in the manufacture of the article, making an indirect expense of 50 cents. Then, the total cost of the article would be $2.20, instead of $2.45, according to the labor-cost method.

The first thing to be observed in this comparison is the difference in the cost of the article, and a little reflection will show that this difference is not due to the fact that the illustration is not in keeping with the possible facts in the case, but that similar differences are likely to appear in the application of the two methods to almost any plant. In fact, it would be strange if the results did agree. In the one case, the product of an employe drawing a high rate of pay is charged with a greater amount for indirect expense than the product of a lower-priced employe. In the other instance, or according to the labor-hours plan, the indirect expense is equally divided between both high-priced and low-priced employes, supposing them to work an equal number of hours per day. For this reason, the results obtainable from these methods could not agree unless the rate of pay was in exact proportion to the time worked; and, allowing this condition throughout the factory, both would still be in error, the amount depending on the difference in the cost of the machine used and the nature of the indirect expense incurred in each particular department.

29. This discussion brings up directly the question of the comparative value of these methods of distributing indirect expense. It has been shown that the labor-cost method, when applied to cover the whole of a plant, failed in three respects, in that it did not discriminate between the differences: (1) in the time of operations on articles of the same class; (2) in the wages paid to skilled and unskilled workmen; and (3) in the equipment and processes in the several departments.

30. Obviously, the labor-hours method solves the first difficulty, because it is based on the time element above all else; and mature consideration leads to the belief that it overcomes, in some part at least, the second objection to the labor-cost methods. All in all, indirect expense is much nearer

being a function of time than of labor cost. The fact that the expense connected with the production of high-priced articles particularly is affected by the difference in the two methods has little or no bearing on the case, because such articles, as a rule, are listed at high prices either on account of the cost of material or on account of the high wages necessarily paid to skilled workmen. But these two factors are comparatively incidental so far as indirect expense is concerned. Cheap material and unskilled labor may go unitedly with long or expensive processes, and vice versa.

This conclusion gains weight when the nature of some of the principal items of indirect expense are considered. Take, for instance, rent, insurance, interest on investment, salaries of office force, light, heat, depreciation of plant, and all similar items of the general operating expenses that pertain to the plant as a unit; these are almost directly proportional to the time in which they are incurred. Nor is there any warrant for claiming that power cost, supervision, machine depreciation, etc. are greater in those parts of the plant where wages are high than where they are low. In fact, supervision is likely to be less where the intelligence of the workman counts for more. Such items as hand tools, intricate machinery, etc., which, as a rule, accompany high-priced labor, are not sufficient in amount to overcome the tendency of the greater part of the indirect expense to accumulate proportionally to the passing of time.

31. In considering the third point of comparison, namely, the difference in processes and equipment, the labor-hours method finds itself no better off than the labor-cost method. It has been repeatedly shown that the product of large and expensive machines should carry a greater part of the indirect expenses than the product of smaller and cheaper machines, because of the differences in interest on investment, depreciation, power, floor space, etc. Of all this the labor-hours method takes no cognizance, and the result is the inequality of charges that has been previously emphasized. The point holds true wherever these differences exist, and it cannot be avoided except by the proper departmentalization of a factory.

Just how serious this may all be can be better determined when the sales department undertakes to market the product. The company will naturally press the sale of articles that appear to bring the greatest amount of profit. If this appearance is not in keeping with the facts, the whole policy of the company may be shaped in the wrong direction. It is a fact that two manufacturers producing the same class of product are unable to compete with each other in certain lines, although they both pay the same price for material, employ the same labor, use the same kind of equipment, and are apparently equally well managed. In general, any difference under these conditions is trifling; yet one can market a certain product at a price that appears to be impossible for the other to meet.

The fact of the matter is that these articles actually cost both manufacturers substantially the same amount to produce, and the apparent difference is due entirely to the difference in the method of figuring indirect expenses, as the other elements of cost would probably be calculated by both parties in the same way. If the same methods of figuring the indirect expense were used by both, the extent of the competition would be governed entirely by the skill in buying and the skill in manufacturing, together with the ability of the sales force, all of which would represent actual conditions existing in business, instead of erroneous ideas as to the price at which the goods could or could not be sold.

It is even possible, where there is a wide difference in the machines and equipment, and where the margin of profit is narrow at best, that a company may be forcing the sale on certain articles at an actual loss and purposely neglecting the sale of other articles, supposedly sold at a loss but actually bringing in large profits, all because of an inaccurate system of distributing indirect expenses over the production.

32. Returning to the comparison of the two methods of distribution, it would seem that the method in which the distribution is based on labor hours is nearer the truth in the application of its principle than the one in which the distribution is based on labor cost, except in those cases in which the

labor cost can be shown to be proportional to the true cost of production.

The main source of error in the labor-hours method is at least constant, while the additional source of error in the labor-cost method includes a factor that varies from time to time, as the conditions of manufacture and rates of pay change, and renders the result more uncertain and less uniform.

Both the labor-cost and the labor-hour methods are imperfect as regards the consideration that if a method of distributing the indirect expense is to produce accurate results the element or elements on which it is based must represent conditions actually existing. It is clear that neither of these two methods is based on this principle, and they do not represent actual conditions except in two instances, namely, where the product and the processes of manufacture are both very simple and uniform in character, and where the distribution is made departmentally. Whatever the principle of a method is, the results will always be inaccurate unless it is applied in such a way as to identify the product produced in a department with the expenses peculiar to that department. No system based merely on an average percentage of the entire plant can overcome this objection.

DIRECT-LABOR-AND-MATERIAL METHOD

33. The plan of procedure in the **direct-labor-and-material method** is similar to that in the labor-cost method, but it uses the total cost of labor and material as the basis of the calculations. It is essentially an averaging method, and is rarely used in any other way. To be at all successful, the material should constitute by far the greater part of the direct cost. If the direct labor is a comparatively small part of the prime cost, and the material and indirect expenses are principal factors, this method might seem practical, subject always to the limitations of averaging methods in general.

If the method is adopted where these conditions do not exist—that is, where the direct labor constitutes an important part of the cost—the results will be further from the truth than those obtained by any other of the methods described.

OLD-MACHINE-RATE METHOD

34. Under the **old-machine-rate method** there are obtained the total indirect expenses and the total number of hours in which machines have been in operation The total indirect expenses are then divided by the number of machine hours to get the rate per machine hour for indirect expenses.

This plan may be used to advantage wherever all the machines are of one kind; that is, when they occupy substantially the same floor space, use approximately the same amount of power, and cost approximately the same. When machines are unequal, however, the method of machine hours breaks down precisely where the method based on total hours of labor fails; it does not take into account the varying indirect expenses due to variation in size and cost of machines, and difference of power to operate them.

35. The old-machine-rate method also fails utterly when applied to factories in which there is a large amount of bench work coupled with machine work. For instance, the machine time required for an article may be a very small part of the time actually spent on it. Suppose that one-half the work is done on the machine, while the other half requires hand labor. Obviously, the share of the indirect expenses as applied to this article would be considerably less than it should be, and the extra cost must be borne by some article that is wholly, or almost wholly, machine made.

Under these conditions, the article that is all hand made would bear no share of the shop charges, even though the department in which it is manufactured occupied a considerable part of the floor room of the shop.

36. The old-machine-rate method is even less reliable than the first two methods described, unless there is a remarkable uniformity of the machine work in the factory. It can be used effectively only by applying it departmentally to those parts of the plant in which machines are in use, and in distributing the balance of the indirect expenses by some other method, over the departments in which the product is hand made.

NEW-MACHINE-RATE METHOD

37. In outlining the various methods now in use for distributing indirect expenses, the plans mentioned are, perhaps, most valuable when used departmentally. As has already been stated, the best method of distributing indirect expenses is that which minimizes the amount of indirect expense to be prorated on a more or less arbitrary basis. By this is meant a method that will localize or centralize the expenses ordinarily termed indirect in such a way as to make it possible to charge these expenses to the product directly, instead of indirectly, and thus reduce the amount that would ordinarily have to be prorated over the production. Consequently, any method, or plan, that provides for charging directly the greatest amount of expense is the most desirable one to adopt.

38. The **new-machine-rate method** was devised with this end especially in view. Where it can be applied, the results may be said to be as near the true costs as it is possible to obtain. But attention should be called at the outset to the fact that the method is limited to those factories or plants in which the majority of operations are machine processes. It must fail when applied to places in which there is a considerable amount of bench work, or in which machines are only incidental to the real process.

The plan of procedure of the new-machine-rate method provides for charging the labor and all departmental expenses directly to a process or a machine in such a way as to show the total cost per hour, or unit of measure, of operating the machine or process. This includes such general operating expenses as do not pertain directly to the machine or process in question, but can nevertheless be associated indirectly with its operation. The rate thus ascertained is charged to the cost of the product, the total charge depending on the length of time consumed in the production.

39. In order to carry out this plan in a practical way, it is necessary to arrange machines of the same kinds in groups, and thereafter to make the charges against the machines according

to a stated name or process. Whenever possible, each group should be treated as a separate department; but when a department must include different processes and machines of different processes, there must be a subdivision of charges in the department itself. It is also possible to handle certain processes other than machine work, provided the cost of all production passing through these processes is affected uniformly.

Attention should be called to the fact that the term machines and processes is often substituted for the word department in order to emphasize the detailed distribution. Unfortunately, not every department can be formed to include machines and processes of a single type, and in that case the charges cannot be made through the department as a whole without a certain loss in accuracy.

After the classification or standardization of operation has been determined on, all operations or processes should be charged with the full time of employes engaged therein, as well as with any supplies or repairs relating to them. In addition to this, insurance, floor space, depreciation, interest on investment, and any or all other items connected with the manufacture of the product and incident to the operation should also be charged. The charges just mentioned relate to expenditures that can be identified absolutely as relating to the machine or process.

When all these charges have been made, the general indirect expenses, or expenses that are not and cannot be properly charged to any particular machine or process, should be distributed among the various departments according to some established basis. Each department in turn applies these general expenses to the product.

Now that the total cost has been charged to the various machines or operations, the next step to be taken is to determine the number of operating hours of the machines or process. From this is ascertained the cost per hour per unit of measure, so that the product passing through these various operations may be charged at this rate. All expenditures chargeable to the product, except material, will then be included for the particular operation or process.

40. The general working plan of the new-machine-rate method is now clear. The machines or the processes are used as a medium for transmitting the charges from their source to the product. They are adapted for this, because a greater amount of expenditure can be identified with a machine or a process than with the product, especially as regards the indirect expenses. In other words, they serve to gather the costs in such a way that the product may be charged directly with them, instead of indirectly. This is accomplished through the rate; that is, the cost to run the machine or process per hour. By such means the amount of general expenses to be more or less arbitrarily prorated is reduced to a minimum.

In order to make this matter clear, attention is called to certain of these expenses ordinarily treated as indirect, but which in this instance become direct charges because of the method used in handling them. Take, as an illustration, interest on investment.

Generally, where costs are figured, this item constitutes a part of the general indirect expenses and is distributed, together with the other items of its class, over the production of the whole factory. Thus, it loses its identity, so to speak, as a separate item, being combined with other expenses to form a single account. Too often it is omitted altogether. By this method, the investment in the machines and equipment used in the several operations or processes is set apart, and the interest on this amount is charged directly to the machines or the processes to which it relates. This is obviously a more accurate method of distributing interest charges, or any other item of the same character, because it is not necessary to take into consideration at this point any particular class of product, the machines or processes being all that is involved.

41. It may be noted that as depreciation keeps an account of the decrease in the value of the equipment, it at the same time furnishes the base on which the interest is to be computed for the then present period. Thus, as the value of equipment becomes less, through depreciation, the interest decreases proportionately.

The problem of depreciation itself finds a more accurate solution by this manner of handling it. As in the case of interest on investment, each machine or process is charged with the depreciation relating to itself. When the whole depreciation is grouped in the general indirect expense, any single department either is forced to help bear the depreciation properly belonging to some other department, or is burdening the rest of the shop with its own depreciation.

The first thing to be done in the calculation of depreciation is to estimate the life of the equipment or the machine, based on operating full time. The cost of the equipment should then be divided by the number of hours in this period, in order to obtain the rate of depreciation per actual operating hour. In charging depreciation monthly, according to this plan, the total number of operating hours of the machines or processes should be multiplied by this rate and the result charged in the cost. This is the most accurate way to figure depreciation, as only the working time is included in the calculation.

42. Other items showing the advantage of this method of treatment are insurance, rent, taxes, machine supplies, heat and power cost, etc. Such items as insurance, rent, taxes, light, maintenance and buildings, and other expenses of similar character are generally divided among the several departments on the basis of floor space occupied. Together, they constitute an amount that may be designated as floor-space cost, the total of which should be divided by the total floor space of the factory to find the amount per square foot or square yard. Each process or machine then receives its share in proportion to the part of the total floor space it occupies.

43. The cost of machine supplies, such as oil, waste, and other items of this nature, for each group of machines, or process, presents no special difficulties, and becomes an item with the rest in the direct charge.

The distribution of power cost over the machine and process necessitates the determination of the horsepower of each machine by taking an indication of power. In this way the power is distributed over the whole productive equipment of

the plant. Allowance for horsepower to cover transmission should be made where great exactness is desired, especially where the transmission power is much greater for some machines than for others.

44. After the preceding information has been obtained, the power account should be charged with fuel, salaries of firemen and engineer, repairs, insurance, supplies, inspection of boilers and engines, depreciation, and all other similar accounts relating to the boiler and engine room, together with an amount to cover interest on investment. This should then be divided at the end of the month by the total horsepower-hours of all machines, as actually operated, in order to obtain the cost of power per horsepower-hour for each particular month. This rate per horsepower should then be multiplied by the total number of horsepower-hours of each machine, in order to distribute the power among the various machines and processes.

All other charges relative to the machine or processes, exclusive of the general indirect expenses, should be charged to the machine or processes at the end of the month in the usual way, except in the case of labor and material. The former should be taken from the time reports, and the latter from the material requisitions, provided a stock system is used, and, if such a system is not used, from the invoices direct.

45. The next question to be considered, now that all the direct charges have been made against the machine or process, is the matter of those expenses which cannot be charged to, or identified with, any particular process or machine. These are divisible into two classes: (1) those which belong to the plant as a whole, and (2) those which can be identified with departments as units but not on particular machines in the department.

The first step is to divide the general indirect expenses among the various departments on some suitable basis, such as, for example, the expense charged to the departments, or cost of direct labor, etc. This amount, so distributed, is then included in, and becomes a part of, the regular departmental indirect expenses, which are afterwards distributed among the various machines or processes.

46. The distribution of the departmental indirect expenses, which now include the general indirect expenses, is the last step that goes to make the final machine rate.

The question to be considered here is, whether the system of costs is based on a unit of measure—that is, pounds or tons—or by the hour. If it is based on a unit of measure, then the total departmental indirect expenses should be divided by the total number of pounds, or tons, or any other unit of measure produced, and the rate thus obtained distributed among these machines or processes at that rate per unit of measure. In this way, all of these departmental indirect expenses are transferred to the various machines or processes to which they belong.

If the basis of cost is time, instead of quantity, the total number of hours in which all machines or processes were engaged during the month should be divided into the departmental indirect expenses and the rate per hour ascertained. This should then be multiplied by the total operating hours of each machine, or process, and the amount thus entered in the cost.

If desired, the total departmental indirect expenses may be divided by the total cost of direct labor, and the rate used in distributing these expenses over the various machines or processes, on the basis of the labor cost, may be charged to each machine or process.

47. The working plan of the new-machine-rate method may now be summarized as follows:

1. All expenses that can be possibly charged to machines or processes are so charged. This includes labor, supplies, interest, etc., as outlined previously. It is this step that constitutes the essence of this method.
2. The general indirect expenses are distributed among the different departments, and are then added to the department indirect expenses.
3. The total department indirect expenses are then distributed over the machines or processes.
4. By combining the charges of one and three, the total machine rate is determined. This rate includes all items of cost but material.

48. To find the cost of any article is a simple process. Suppose it to pass through several departments or processes. The number of hours it is operated on in each process, multiplied by the machine rate for that process, gives the different process costs.

To the sum of these, or the total process cost, add the material cost, taken from the invoice or material requisition, and the final, or factory cost, is obtained.

If the principles of the new-machine-rate plan are applied through the operator of the machine instead of through the machine itself, a similar method of finding costs will be developed. It is known as the *sold-hour plan.*

FIXED-MACHINE-RATE METHOD

49. The essential step in the **fixed-machine-rate method** consists in the preparation of rates, which are obtained departmentally—either from the results furnished by a system previously operated or from an investigation and analysis of the expenses known—to be chargeable to particular machines or processes. These charges are then calculated according to the maximum operating machine time.

The machine rate thus obtained is then charged to the cost each month and credited to the department indirect-expense account, irrespective of the actual cost per hour, as shown by the actual charges and the actual machine time. This department indirect-expense account consists of the sum of the machine rates for a given period, and is supposed to include all the indirect expenses connected with the department as such. The general indirect expenses are not distributed departmentally in this method, but by a supplementary rate, which, as generally used, covers the whole factory. In this supplementary distribution, any desired method can be employed, such as labor cost, labor hours, etc.

After these rates have been obtained, and the machines or processes to comprise the system classified, the actual charges relating to the machines or processes, which are presumably included in the rate, are determined. Whatever differences

exist between the estimated rate and the actual charges are transferred to the general indirect-expense account, to be adjusted through the supplementary distribution.

50. Up to a certain point, there is a similarity between this plan and the new-machine-rate method previously described; but after that, and actually as to results, there is a wide difference. In this instance, all the charges relating directly to the machine or the process are entered in the cost, precisely in the same manner as in the other system. However, in calculating the rate per hour, the indirect expenses in the new machine rate are distributed over the machines or processes and included in the machine or process cost; whereas, in the fixed machine rate, the indirect expenses that cannot be identified with particular machines or processes are prorated over the entire production on a percentage or some other basis.

The fixed-rate method differs from the new-machine rate in that the rate, to begin with, is based on an estimate or, at best, on what happened during some previous period. It also assumes an efficiency of 100 per cent. in running, which is a condition that has never been known to exist. Crediting the departmental indirect-expense account with charges based on running maximum time, where the product is only charged with the actual running expenses of the machines when they are at work, necessarily produces a credit balance for the indirect-expense account in a comparatively short time; that is, the indirect expenses of the department appear in the charges to the production as being much greater than they really are. Compensation for these extra charges must be made somewhere, or the costs obtained would be nothing short of ridiculous. Therefore, the difference, or the amount by which the indirect-expense account exceeds the actual charges, is deducted from the general indirect expenses before they are distributed.

51. The nature of this proposition can be understood more clearly when it is considered that, if there are a great number of machines idle, the general indirect expenses appear to be much diminished. In fact, if a major part of the equipment

were not at work, they would disappear entirely. At the very best, this results in a distribution that is so inexact as to be valueless to the manufacturer; nor is it correct in amount, when considered in its entirety. The plan of deducting the rate of idle machines from the general indirect expenses assumes that there are no indirect expenses whatever connected with the machine while it is standing idle. But, as has been seen, this is not true. Interest, floor space, rent, and depreciation, to a greater or less extent, besides other expenses of this nature, go on just the same, and no provision is made for their incorporation in the true costs of the plant.

52. This difficulty is far from being imaginary, for it arises in two very common cases, namely, when parts of the factory are idle, as in dull times, or when there are machines that are only used occasionally at best. Some of these latter are a necessity, and yet, owing perhaps to their enormous capacity or peculiar product, they cannot be expected to run more than a small fraction of the whole time. Obviously, nothing can be gained by charging the product of such machines with charges based on full efficiency. In fact, its principal effect is to disturb the costs of the whole factory.

On the other hand, if the machine rate, as previously fixed, is less than the actual rate, the difference between the charges of the estimated rate and the actual charges must be added to the general indirect-expense account and subsequently distributed over the production in the supplementary entry; otherwise, the cost records, without the supplementary entry covering these deficits in machine rate, would be far from accurate.

53. Attention is at once attracted to the fact that no matter which way the discrepancy occurs, recourse is had to the indirect expenses to adjust the difficulty. The trouble here is that the rate is essentially an estimate, and is arbitrary. If it agrees with the actual charges, all well and good; but it is far more likely not to agree with them, and then there is that discrepancy which cannot but throw the true distribution of indirect expenses out of order.

The differences, and resulting errors, are accentuated because the rate is based on full running time, instead of on the average or actual running time, which, after all, is the logical basis for a machine rate. It is not a question of what a machine can do, but what it does do, day in and day out, even if this represents only 40 per cent. efficiency.

Altogether, it may be concluded that, except in very special cases, the fixed-machine-rate method is not adapted to give satisfactory results in the determination of true costs.

NEW-PAY-RATE METHOD

54. The principles underlying the **new-pay-rate method** are the same as those underlying the direct-labor-cost method, but they are applied differently. The indirect expenses relating to a particular department are ascertained separately, and the general operating expenses are distributed among the departments on the basis of direct-labor cost before the percentage of indirect expense of each department is calculated. The total department indirect expenses are then applied separately to the product manufactured in each of these departments, but in a different manner than has yet been described.

55. The chief feature of the new-pay-rate plan is that, after the indirect expenses are determined departmentally, instead of charging them as percentages to the product of these departments, they are added as separate rates to the rates of pay of the employes engaged in each department. The new rate, which includes indirect expenses, is charged to the product by multiplying the employe's time consumed in the operation by the new rate, instead of first charging or extending the amount of labor cost and then adding the percentage for indirect expenses.

56. This method has some distinct advantages and, at the same time, correspondingly great disadvantages. In the first place, it is applied departmentally and so avoids most of the defects noted in the methods employing an average

rate. Even then it can be used only where the conditions in the department itself are comparatively uniform as to wages, equipment, etc.

Its great practical advantage lies in its simplicity. In comparison with prorating the indirect expenses over several hundred orders or articles, it is exceptionally simple, because the greater part of the calculation lies in figuring the pay rate. When this is determined, the application to any order or article is only a matter of multiplying the time the order or article was in process by the rate per unit time. Nor is the determination of the pay rate a bit more difficult than the fixing of any other rate that will distribute indirect expenses accurately. The saving of time in a large plant, resulting from the use of this method, would probably amount to a considerable item; and, allowing that the distribution had been made under conditions where it would be accurate, this point only would recommend it strongly to the manufacturer.

However, the disadvantages connected with its use are no less great. Let it be admitted that this method succeeds in giving true costs; this is only half the point of a cost system. The data of a good system should be so compiled and arranged that an analysis can be made of the costs in any or all parts of the plant. This is impossible under the new-pay-rate method in its simple form. It collects charges in totals, and attains its simplicity by neglecting the proper classification and arrangement of separate items.

If the manufacturer wishes to find these things out in order to locate leaks or effect economies, he must make a separate job of it and disassociate it more or less from the cost system; but by so doing he falls back into the same difficulty that he hoped to avoid by the use of the new pay rate, namely, the necessity for detail. All in all, he might better, perhaps, have installed some other system that would collect and arrange the data necessary for analysis as a part of its regular function.

57. Where the analysis of the costs in a factory is not particularly desired by the management, and where other

conditions admit of its being used, there is no method that will give more satisfaction than the new pay rate. But it should be borne in mind that it sacrifices the means of detecting weak spots in the processes of production, which feature is a valuable and essential one in connection with a proper cost system.

CHOICE OF DISTRIBUTING METHODS

58. At different times in this treatise the use of two or even more methods of distribution in the same plant has been suggested. This should be emphasized as one of the most valuable points made. One of the great difficulties in finding costs in large plants has been the utter dissimilarity of process in different parts of the same plant. How to deal with this feature, and at the same time keep within the limits of practical detail, has been a constant and a most irritating problem to the manufacturer.

As has been pointed out, the practical solution lies in the proper departmentalization of the plant and the determination and distribution of the indirect expenses through the medium of these departments. It is by this means that the expenses are properly localized and, at the same time, a wider field for the choice of distributing methods is obtained.

When a plant is once properly classified, the manufacturer is free to use a machine rate where the processes are essentially machine processes; and where they are not he can introduce the labor-cost, the labor-hours, or some other method suitable to the conditions. The new-pay-rate method is often very effective when used in certain departments where the nature of all the expenses is already well understood.

This freedom of choice marks the highest development of the modern cost system, and is at once the result of, and the most effective instrument connected with, the proper organization of factories in arriving at the correct finding of costs.

COST ACCOUNTING
(PART 4)

COMPILATION AND DISTRIBUTION OF COST DATA

GENERAL PROCEDURE

1. Before proceeding with a discussion of the compilation and distribution of cost data, a brief review of what has already been covered regarding the analysis of the elements of cost, namely, material, labor, and indirect expenses, may be valuable as an introduction to understand better the necessary forms and records used in the compilation.

The purpose of the purchase requisition and the purchase order was explained, and afterwards the importance of filling out the material-received sheet and the necessity of keeping the stock records of raw material were emphasized. Then followed a discussion of the official authorization to start operation upon a particular job or class of product, as well as illustrations of the importance of the material requisition and bill of material, and finally there was shown the value of the inventory test.

Likewise, in the discussion of labor, the advantages and disadvantage of the seven recognized and standard methods of paying wages were treated and each method was compared with the other. Following the wage systems were shown various forms for the recording of the time of the employes.

The items composing indirect expenses, as well as the methods of distributing this element of cost, have been described and the

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advantages and disadvantages of the various methods have been discussed in considerable detail.

2. The next subject to claim attention is how to arrange and record the cost data so that it can be used to the greatest advantage and, at the same time, to eliminate unnecessary bookkeeping and red tape in general. Too much emphasis cannot be placed on this point, for the strongest and most permanent objections to cost systems as a whole arise out of the trouble and expense of collecting and keeping the cost records. Since the processes involved in production are themselves complex, the constant tendency on the part of the person who is not an expert is to multiply records and transfers far more than may be actually necessary to get at the results. The collection and general scheme of arrangement of cost data rest on principles that do not change, but a great deal of ingenuity may be exercised in their adaptation to any particular manufacturing business that will always have conditions and circumstances peculiar to itself. Every form used in the collection of the data at first hand should be devised with an eye to its convenience when employed later on in summarizing the costs in the office.

3. Before any system of arrangement is decided on, the unit of time for which costs are to be summarized and reported should be determined. The lapse of time that is used as a basis for the entering of all cost calculations upon the cost records so as to facilitate the preparation of periodical statements is known as the *cost period*. It may be a period of 4 or 5 weeks or it may be the regular calendar month, depending on the conditions of the particular plant in question. If the employes are paid weekly, it is much easier to use a period of 4 or 5 weeks as a basis than to use the regular calendar month and calculate accruals for the few extra days in the month for that part of the wages which is still unpaid. On the other hand, if the employes of the factory are paid monthly or twice a month, the regular calendar month may be used as the basis for the cost period.

4. After having decided on a cost period, the compilation of the *elements of cost*, namely, material, labor, and indirect expenses, should receive attention.

In the designing of forms for the compilation of the details of cost, the first and most important point to be determined is the basis of cost finding; that is, whether the cost of each production order is to be obtained or only the cost of all articles of a similar description. In many instances, a factory order is issued for goods that are manufactured continuously, and the cost of this order is ascertained separately. This policy is good when practicable, as in this way results are obtained that could not be accomplished if the cost of the article were figured separately from the orders issued. In some instances, however, it is impracticable or even impossible to figure costs according to a particular order, owing to the difficulty in keeping track of such an order after the product passes through several operations, and in cases of this kind it is simpler to ascertain the cost by article and disregard the order number entirely.

5. After the basis of cost finding has been decided, the next point to be considered is whether the direct-labor method or the process-cost method should be applied to the cost-keeping system.

In the direct-labor method the labor is charged directly to the order or the article to which it belongs, and to this is added the material cost and the pro-rata share of indirect expenses, which gives the total cost of the order or the article shown in the record.

In a process-cost method, all these charges are made against the process or the operations, and then the total process cost is divided by the amount of product to get the cost per unit of product. When a process is limited to the work of a single machine or a group of similar machines, the charges are made against the machine, and the method is called a *machine cost method*. While often differing in details, the principle is the same and it is properly considered under that head.

6. The most accurate results from a cost-keeping standpoint can be obtained by calculating costs whenever possible

according to the machine method of cost finding, for the reason that by this system a larger amount of indirect expenses can be definitely charged to a particular machine or process. For instance, such expenses as power, insurance, depreciation, maintenance, machine supplies, and some of the labor ordinarily included as non-productive labor can by this method be charged to a machine or a group of machines, thereby reducing the amount of general expense not chargeable to a particular operation. Since the overhead expense is the most uncertain element of cost, and as its distribution over the production is the most likely source of inaccuracies, it is evident that any plan, or method, that will reduce the amount of the expense to be distributed on a more or less arbitrary basis will naturally decrease the effect of any mistake and produce more accurate costs.

Any complete cost system falls within four general classes. It may be:

(1) A special-order system based on productive labor; (2) a special-order system based on process or machine costs; (3) a product system based on productive labor; or (4) a product system based on process or machine cost.

The set of forms used will, of course, depend on which of the four classes is chosen as best adapted to the conditions at hand.

7. The first step in the compilation and distribution of cost data is to review both the various entries that form necessary parts of a cost record and the sources from which they are obtained. The entries themselves may be posted to a cost journal and from there classified and entered into the operating ledger, or they may be transferred directly to the operating ledger from summarizing sheets; for example, the pay roll or many accounts may be entered directly from the original records. As far as possible, the nature of the whole system should be such that it will admit of easy reference; also, there should be a system of checks between the different parts so as to avoid errors or to detect them quickly when they do occur.

It must be kept in mind that these entries record only the transactions that enter into cost records as such. For the present, their relation to the general financial books of the business is not to be considered at all.

HANDLING COST ELEMENTS

MATERIAL

8. Summary of Material Received.—When the material is received, the receiving clerk, after inspecting and counting the goods received, makes out a material-received sheet, which gives rise to the first entry, namely, a *debit* to material or supplies and a *credit* to the creditor or cash.

This entry, for the charges to the stock records of raw materials and supplies, may be made by means of the accounts-payable voucher, which is entered in the accounts-payable voucher record or register of accounts payable in connection with the material-received sheet. However, these charges may be made weekly or monthly by means of the summary of material received. When the term monthly is used, it covers also the period of 4 or 5 weeks or any other period of time that is used as the basis for the cost period. The form used would be the same as the material-received sheet, except that it would be extended to cover all receipts for the cost period.

If, during the month, there have been several receipts of the same class of raw material or supplies upon which the price does not fluctuate to any considerable degree, time can be saved by means of this summary, by making one posting for all the receipts of a certain class of material upon the stock card at the end of the month.

9. Summary of Material Requisition.—After having decided on a method of recording the receipts of raw material and supplies, the next step is to consider the entries for the deliveries to the various operating departments. These entries embody a *debit* to the operating department, the job, the order,

REPORT OF MATERIAL DELIVERED

For the Month of _____ 19___

	CLASSIFICATION No.	ORDER No.	DEPARTMENT	ARTICLE	QUANTITY	RATE	AMOUNT	TOTAL

FIG. 1

or the article, depending on the method of the cost-keeping system in use, and a *credit* to the raw-material stock.

As in the case of the raw material received, these entries may be made daily, weekly, or monthly. When they are made weekly or monthly, a summary of material requisition or bills of material (Fig. 1) may be used, and in that case the material requisition would be attached to the summary sheet for the purpose of filing these records.

It must be borne in mind that the summary of material requisition can be used to advantage only when there are no fluctuations to speak of in the prices of the articles that are requisitioned out during the period. In case there are steady purchases in a changing market, there being no difference in the material itself, it is often customary to take the average price and to consider this price as the material cost for the summary of material requisition.

LABOR

10. Pay-Roll Summary.—When the wages of the operators are paid, the entry would embody a *debit* to wages or pay-roll account and a *credit* to cash.

Now, in order to distribute the wages, the time reports should be summarized upon a pay-roll summary. This pay-roll summary, besides showing the total amount of wages, shows also the amount due each employe and may be used for pay-roll purposes.

The entries for the distribution would embody a *debit* to the order, the job, the article, or the department for the productive labor, that is, labor that is chargeable directly; a *debit* to the overhead expense for the non-productive labor, that is, labor that cannot be charged directly to any special order, job, article, or department; and a *credit* to the pay-roll account for the total amount of wages distributed.

11. Pay-Roll Forms.—To understand this matter clearly, reference should be made to the following forms:

FACTORY PAY ROLL

For_____ Week ending_____ *19*____

	EMPLOYE						DISTRIBUTION				
	DEPT.	CLOCK No.	NAME	RATE	TIME	AMOUNT	DIRECT	INDIRECT	SUPERVISION	POWER	MAINTENANCE

PAY ROLL

Clock No. _____

Name _____ Department _____ Rate _____

DATE	Order, Job No., or Process	ARTICLE	OPERATION	MADE	DEFECTIVE	GOOD	TIME	RATE	AMOUNT

FIG. 3

Fig. 2 illustrates a form on which the time records may be entered after being summarized for pay-roll purposes and also for the distribution of the labor according to department and according to direct, indirect, supervision, power, and maintenance distribution.

Fig. 3 illustrates a form on which may be summarized the time records for charging direct labor to the order, the job number, or the process. A form of this kind may be used for summarizing the direct labor according to each individual workman; or, the name of the workman may be omitted on the form used for summarizing the cost on the order, independent of the individuality of the workman.

INDIRECT EXPENSES

12. When overhead expenses are incurred, a *debit* is made either to the indirect-expense account or various expense accounts representing the different classifications of indirect expenses, and a *credit* is made either to cash or to the creditor.

The next step is to distribute these overhead expenses over the various orders, the job, the operating department, or the

Department No. 1	$803.67	
Department No. 2	58.58	
Department No. 3	274.16	
Department No. 4	573.59	
Department No. 5	218.73	
Department No. 6	82.54	
Department No. 7	175.98	
Superintendent		$184.32
General labor		967.19
Light, heat, and power		136.23
Insurance		375.14
Taxes		245.83
Freight, express, and cartage		109.45
Factory supplies		16.21
Salaries of factory-office clerks		115.00
Factory-office supplies		10.72
Incidentals		27.16

FIG. 4

machines. The Section relating to the distribution of indirect expenses shows, besides the various methods of distribution and comparing the advantages and disadvantages, a statement of factory expenditures that serves to illustrate the compilation

and distribution of these overhead expenses over the various departments according to the productive labor method. The entry distributing the general operating expenses of $2,187.25 would be as shown in Fig. 4.

PRODUCTION

13. The recording of the production of various operating departments and of the plant as a whole is a very important link of a complete cost-accounting system. The production report, besides being used as a record for cost entries, serves as a basis for comparing and judging the efficiency of the vari-

PRODUCTION REPORT No._____

_____ Department Date_____ 19__

PRODUCTION			QUANTITY		
ORDER NO.	ARTICLE	OPERATION	MADE	DEFECTIVE	GOOD

Received by: _____ Correct: _____

FIG. 5

ous operating departments and also brings before the management the daily and weekly output of the plant.

The reports may be designed so as to be used for the purpose of posting the credits to the stock records or cost records, as well as for posting the charge to the operating departments to which the goods are transferred to the partly finished or the finished-stock accounts.

14. Fig. 5 shows a simple form of production report. It is meant to show only the quantities produced, and is generally

used for the purpose of checking up piece work and keeping a record of stock.

Fig. 6 shows a production-report form that has provisions for the quantity, rate, and amount of the production; also, it provides for showing the material cost that has gone into the making of the article.

Fig. 7 shows a form in which may be recorded the cost of the previous operations, the cost of material, labor, and indirect expenses consumed in the local department, and the total cost of all operations up to and including the department in which

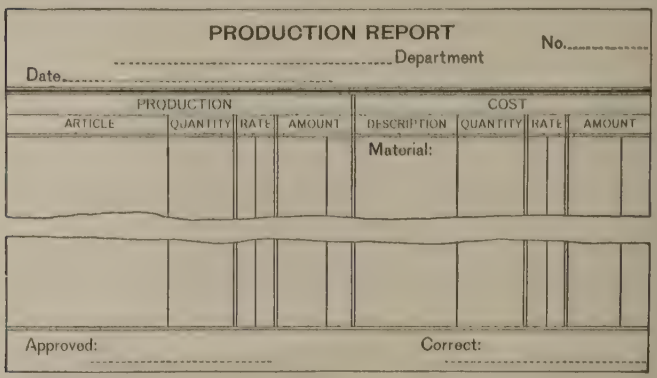

Fig. 6

the report is made out. If the article is transferred to another operating department, the entry would be to credit the one operating department and to charge the other with the accumulated cost to date. However, if the article were completed, the entry would be a *charge* to finished stock (or it might be partly finished stock if the article were transferred to stock in a partly finished condition) and a *credit* to the operating department.

Fig. 8 illustrates the style of production report used in a brass foundry.

As has been said before, all the forms shown throughout are used only for illustrating the principle, and there are many

SUMMARY OF PRODUCTIONS & COSTS

_____ Operation

Week ending_____ 19___

ARTICLE	PRODUCTION							COST											
	M	T	W	T	F	S	TOTAL	PREVIOUS OPERATIONS		MATERIAL		LABOR		INDIRECT				TOTAL	
								RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	%	AMOUNT			RATE	AMOUNT

cases where forms of an entirely different character will have to be made to meet the individual needs of the plant. The

PRODUCTION REPORT
BRASS FOUNDRY

No._____
Date_____

METAL	QUANTITY	RATE	AMOUNT	LABOR	TIME	RATE	AMOUNT
SUNDRIES				FUEL			

COST OF MELT	RESULT OF MELT
Metal, $_____	Good Castings, Quantity_____ Rate_____ Amount_____
Labor, _____	Defective " _____ " _____ " _____
Fuel, _____	Scrap " _____ " _____ " _____
Sundries, _____	Waste " _____ " _____ " _____
Total, $_____	

Approved: _____ Cost Clerk

Correct: _____ Foreman

FIG. 8

form shown in Fig. 8 is used here to illustrate this point, as well as to show how different this form of production report is from the preceding ones.

DEFECTIVE WORK

15. The forms illustrated in Figs. 5 and 6 are used also for showing the defective work produced. The record of this class of work may be repeated upon a separate daily or weekly form, and is intended to bring to the attention of the management that part of the product which is rendered worthless, or partly so, in the process of manufacture.

ILT 133C—10

DEFECTIVE WORK REPORT

_____ Department For _____ 19___

	ARTICLE	DEFECT	CAUSE	DISPOSITION	QUANTITY	RATE	AMOUNT

Approved: _____ Correct: _____

FIG. 9

The defective-work report shown in Fig. 9 is important and will, in most cases, result in a saving to the business where it is used, as the majority of foremen and superintendents are not desirous of having frequent reports of this character made.

16. The product of defective work is worthless from a cost-finding standpoint and may be disposed of in one of the following ways: It may be charged directly against the order or article; or it may be charged to a defective-work account, which is included in the general expenses of the business.

However, if the material is reclaimed, it should be taken into stock at a reduced rate, and the difference between the cost and the reduced rate should be charged in the manner just stated.

The loss from defective work is one that occurs to some extent in almost every factory and can be prevented only by a definite method of knowing when it exists and the reason therefor. The mere knowledge on the part of the men that defective work will surely be reported will result in a considerable decrease of such work, and proper action may be taken by the management to eliminate as much of the rest as possible.

STOCK RECORDS OF FINISHED AND PARTLY FINISHED STOCK

17. All remarks regarding the raw-material stock records necessarily apply to the records of finished stock and partly finished stock, as both are for the purpose of keeping track of stock and regulating production.

A stock card is shown in Fig. 10. It shows quantities only, its main purpose being to keep track of the stock on hand.

18. Fig. 11 illustrates a stock card that shows the quantity, the rate, and the cost value of the stock produced, of the shipments, and of the balance.

It may be desirable to provide columns for showing the orders received and canceled as well as the unfilled orders on hand, so that the management in issuing instructions to the factory relative to the quantity to be manufactured may be able to consider the balance of stock on hand in connection with the unfilled orders.

STOCK CARD
FINISHED PRODUCT

Class No._____
Maximum_____
Article_____ Minimum_____

DATE		PRODUCTION		SHIPMENTS		BALANCE
		REPORT NO	QUANTITY	REPORT NO.	QUANTITY	QUANTITY

FIG. 10

STOCK CARD
FINISHED PRODUCT

Classification No._____
Maximum_____
Article_____ Minimum_____

DATE		PRODUCTION			SHIPMENTS			BALANCE		
		QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT

FIG. 11

The form may be so designed as to show, in addition, the gross profit, which would necessitate a column for the purpose of showing the selling price of the article. This information will be of value in cases where there are sold a number of articles of the same class that must be carried in stock as a complete line, although it may be known that little or no profit is made on certain of the articles, the question being whether sufficient profit is made on the others to justify carrying the entire line. It will enable the management to ascertain exactly which articles are made at a loss and which are made at a profit.

19. Fig. 12 shows a form designed for the purpose of recording all the preceding information. The production would be obtained from the production reports or cost sheet, depending on the method in use; the sales or shipments could be taken from the sales sheet, or sales book, or from a copy of the shipping order; the orders received and canceled can be taken from the customer's original orders or from correspondence; the unfilled orders, of course, represent the difference between the total orders received, less the canceled orders, and the total shipments. The balance of stock on hand consists of the difference between the production and sales columns. The gross profit is ascertained by deducting the cost of the goods sold from the selling price.

20. In many kinds of manufacturing, the several parts of the product may have to be made in different parts of the plant and then transferred to an assembling department to be put together. In many instances, again, the product must be laid aside for awhile, perhaps to undergo some long process, as seasoning, or for a great variety of reasons. All such material on which the manufacturing process is begun, but not yet finished, comes under the head of *partly-finished stock*, and it is very important that accurate records be kept of this if the factory is to know where it really stands at any given time.

As the stock moves from department to department, or is taken back to the stock room, the total cost to date is debited to the receiving department and credited to the delivering department, which gives a record by which it may be located.

Stock
Finished Product

Article _____ Sheet No. _____

Maximum _____

Minimum _____

Date	PRODUCTION				ORDERS		SALES				COST OF SALES		GROSS PROFIT		UNFILLED	BALANCE		
	Report No.	Quantity	Rate	Cost	Received	Cancelled	Sheet No.	Quantity	Rate	Amount	Rate	Amount	Amount	Rate per...	Orders	Quantity	Rate	Amount

FIG. 12

21. Where records are kept with partly finished stock, forms and methods similar to those explained for finished stock can be used; the only difference being that the deliveries of partly finished stock are taken from requisitions as a rule, instead of from the sales sheets or shipping orders, as in the case of finished stock.

If, as sometimes happens, partly finished stock is sold, the cost can be obtained from a report like that shown in Fig. 7, and the transaction entered as coming under the head of finished stock of a different kind.

22. This completes the kinds of entries as generally found in any business, though there may be special entries to meet any special conditions. It remains to indicate how they are summarized into different accounts.

SUMMARIZING ENTRIES INTO ACCOUNTS

OPERATING LEDGER

23. The **operating**, or **factory, ledger** is that book in cost accounting which arranges and classifies the detailed entries that have been made upon the original records.

The accounts generally kept in the operating ledger are: (1) Raw-material-and-supplies account; (2) labor account; (3) indirect-expense account; (4) accounts for the various orders or jobs; (5) accounts for the various operating departments; (6) partly finished-stock account; (7) finished-stock account; and (8) general or private ledger account.

24. The *ruling* of the operating ledger may be similar to the ordinary ledger ruling; that is, a column for the date, the explanation, the reference, and the amount on both the debit and credit sides. However, it may be well to have distinctive rulings for the various accounts. For example, while the ordinary ledger ruling would answer for the accounts of raw material and partly finished and finished stock, the order or job and department accounts would be ruled in the manner shown

in Fig. 13; also, the labor and overhead-expense accounts might be ruled according to the ordinary ledger ruling, and the analysis of these accounts may be upon a form similar to that shown in Fig. 14.

25. Raw-Material-and-Supplies Account.—The raw-material-and-supplies account shows in total what is shown in detail by the raw-material stock records. The account is debited with all the material and supplies received, and is credited with any material and supplies returned and with all the deliveries to the operating departments. The entries may be in detail or in total, depending entirely on the system

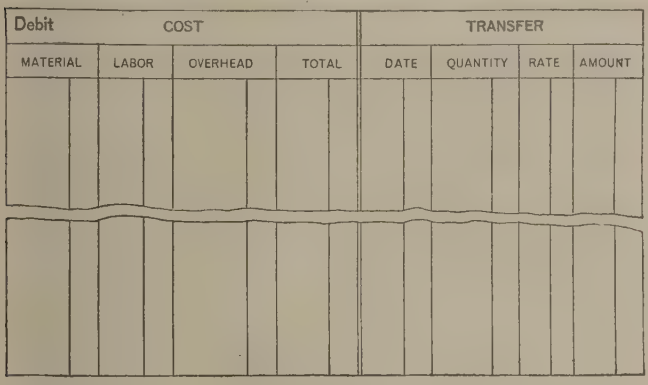

FIG. 13

in use. The balance at the end of a cost period should equal the total of the balances shown by the raw-material stock records.

26. Labor Account.—The labor account is debited with the amount of the pay roll and is credited with its distribution to the various order, or job, numbers or operating departments, depending on the system in use. If the cost period conforms to the pay-roll periods, the balance on the labor will always be a debit, which shows the amount of labor undistributed. On the other hand, when the cost period does not agree with the pay-roll period, the balance will show, if a credit,

ANALYSIS OF EXPENDITURES

OPERATING LEDGER _____ Department

For _____ 19____

DATE	ACCOUNT No	ACCOUNT												

FIG. 14

the amount of labor accrued but not paid, and, if a debit balance, the amount of labor paid that has not been distributed to the various operations.

27. Indirect-Expense Account.—The indirect-expense account shows on the debit side the amount incurred for overhead expenses and is credited with the distribution of the same. The balance, if any, would be a debit that would show the amount of expenses incurred that have not been distributed. Of course, an account might be kept for each class of expenditures that goes into the indirect expenses. However, if this is not done, one account will suffice, and at the end of the cost period it can be analyzed upon a form similar to that shown in Fig. 14.

28. Special-Order, or Special Job, Account.—The special-order account is debited with the elements of cost, material, labor, and indirect expense, and is credited when the job is completed with the total cost. The balance, if any, is always a debit and shows the cost value of the jobs in their uncompleted state.

29. Operating-Department Accounts.—The operating-department accounts are debited with the total cost, if any, incurred in previous operating departments, as well as with the material and labor consumed in the operating department in question, the amount of the department expenses, and a per cent. of the total indirect expenses. They are credited with the total accumulated cost when the job is transferred to the next operating department or to partly finished stock or finished stock. The balance, if any, is a debit, and represents the cost value of the work in process in that department.

30. Partly Finished-Stock Account.—The partly finished-stock account is debited with the cost of the partly finished stock, and is credited with the cost of that part which is either put into process for the purpose of completion or which is sold. The balance, if any, is a debit and shows the cost value of the partly finished goods on hand. This account shows in total what is shown in detail by the partly finished-stock records, and the total of the balances as shown by the

partly finished-stock records should agree with the balance shown by the partly finished-stock account.

31. Finished-Stock Account.—The account for finished stock is debited with the cost of the goods that have been finished, together with the cost of the returns to stock by customers, and is credited with the cost of the goods sold. The balance, if any, is a debit and shows in total the cost value of the stock on hand. The finished-stock records show in detail what is shown by the finished-stock account in total, and, as in the case of the stock records previously mentioned, the balance as shown by the finished-stock account should agree with the total of the balances shown by the finished-stock records.

32. General- or Private-Ledger Account.—The general- or private-ledger account is the balancing account of the operating ledger and is also the connecting link between the cost records and the financial records. By means of this account, a trial balance of the operating ledger can be taken off. It is credited with the amount of material, the labor, and the indirect expense, which elements are debited to their respective accounts, and is debited with the cost of goods sold, which cost is credited to the finished-stock account; the balance is a credit and agrees with the debit balance of the operating-ledger account in the financial books.

COST JOURNAL

33. The **cost journal,** Fig. 15, is generally designed similar to the ordinary two-column journal; that is, it has a column providing for the date, a wide column for the explanations, a narrow reference (folio) column, and two money columns, one for debits and the other for credits.

The cost journal is not used in every system of cost accounting as a posting medium for the operating ledger, as the information that would generally go into it may be had directly from the other records.

34. Assuming that the cost journal were in use, the entries shown in Fig. 15 are the ones that would go into the journal.

	Date		Folio	Debit	Credit
Entry No. 1		Raw Material and Supplies: To (Creditor or Cash) General-Ledger Account. For the total amount of purchases received during the period.			
Entry No. 2		Labor: To (Cash) General-Ledger Account. For the amount of wages paid during the period.			
Entry No. 3		Overhead Expenses: To (Cash or Credit) General-Ledger Account. For the amount of overhead expenses incurred during the period.			
Entry No. 4		Job, Order, Article, or Department: To Raw Material and Supplies. For the amount of material requisitions during the period.			
Entry No. 5		Job, Order, Article, or Department (Direct Labor): Overhead Expenses (Non-Productive Labor). To Labor: For the amount of wages distributed during the period.			
Entry No. 6		Job, Order, Article, or Department: To Overhead Expenses: For the amount of overhead expenses distributed during the period.			
Entry No. 7		Partly Finished Stock or Finished Stock: To Job, Order, Article, or Department. For the amount of work finished and placed into stock during the period.			
Entry No. 8		(Cost of Sales) General Ledger: To Finished Stock. For cost of goods sold during the period.			

Fig. 15

Entries Nos. 4, 5, and 6, Fig. 15 may be combined into one entry, in which case they would read as shown in Fig. 16.

	Date		Folio	Debit	Credit
Entry No. 9		Job, Order, Article, or Department: To Raw Material and Supplies, Labor, Overhead Expenses. For the amount of material requisitions and the amount of labor and overhead expenses distributed during the period.			

Fig. 16

If partly finished stock (see entry No. 7, Fig. 15) were put into operation again to be completed, the entry would be as shown in Fig. 17.

	Date		Folio	Debit	Credit
Entry No. 10		Job, Article, Order or Department: To Partly Finished Stock. Amount of partly finished stock put into operation for the purpose of being completed.			

Fig. 17

The ten entries shown in Figs. 15, 16, and 17 illustrate the various steps in a cost system and follow the raw material through the various operations until it becomes a finished product and is placed on sale.

35. The records from which the preceding entries could be posted directly into the operating ledger if the cost journal were not in use are as follows:

Entry No. 1: Cash book; accounts-payable voucher; register of accounts payable; summary of material received.

Entry No. 2: Cash book; pay-roll book or summary.

Entry No. 3: Cash book; accounts-payable voucher; register of accounts payable.

Entry No. 4: Material requisition or bill of material; summary of material requisition or bills of material; production report.

Entry No. 5: Pay-roll summary; production report.

Entry No. 6: Statement of factory expenditures; production report.

Entry No. 7: Production report.

Entry No. 8: Shipping order; register of sales and cost on sales book.

Entry No. 9: The combination of entries Nos. 4, 5, and 6.

Entry No. 10: Summary of requisitions for partly finished stock.

36. The preceding entries indicate the main classes that would be made in a cost system, but they are not meant to be exhaustive. There are always entries for transfers between operating departments, defective work, discrepancies in inventory tests, and other adjustments to be made in the various elements of cost.

The best way to handle these entries is through the journal, or if no journal is kept, then through summarizing sheets. They should be classified under the proper headings and charged to the various divisions of indirect expense or other cost, as may be, and only the summary posted to the operating ledger. Otherwise, instead of being reserved for the totals of the main accounts just described, the ledger will be overburdened with a lot of particular accounts that do not properly belong there.

COST ACCOUNTING
(PART 5)

CONTROL OF COST RECORDS BY FINANCIAL BOOKS

CLASSIFICATION OF ACCOUNTS

1. With the cost accounts once compiled and classified in the operating ledger, the next question to consider is their relation to the general financial accounts of the company. If the system is to be a complete one, these results will ultimately be shown in the general or financial accounts, which are usually contained in a general or a private ledger. These accounts should be so classified as to show both the financial status and the earnings of the enterprise. The accuracy and clearness of the results to be obtained will depend to a great extent on the proper classification and arrangement of the accounts. It is not necessary in the case of a small enterprise to have an elaborate or extensive classification of accounts. A few will answer all purposes in such cases, provided the purpose of each account is well defined and charges and credits to these accounts during the year are properly made. The accounts, however, must be arranged so as to admit of showing proper results, at the end of either a cost period or a year, according to the general plan of the system.

2. Accounts are divided into two general classes; namely, *real accounts* and *nominal accounts*. Real accounts include the assets and liabilities, and nominal accounts consist of sales and

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cost of sales, manufacturing expenses, selling expenses, and administrative expenses.

All the real accounts are kept in the general or the private ledger with the exception of the material accounts (finished, in process, or raw), which accounts are kept in the operating or the factory ledger. All the nominal accounts are likewise kept in the general or private ledger with the exception of the manufacturing-expense accounts.

REAL ACCOUNTS

CLASSIFICATION OF GENERAL- OR PRIVATE-LEDGER ACCOUNTS

3. In the general or private ledger, the asset accounts are divided into *fixed assets*, or *property accounts*, which include real estate and buildings, machinery and tools, and furniture and fixtures; *current assets*, which include cash (in the bank), notes receivable, accounts receivable, and consignments; and *deferred charges*, which include selling expenses and administrative expenses. The liabilities accounts include *capital* or *capital stock and surplus; funded debt*, which consists of the mortgages on real estate and buildings; the *current liabilities*, which consist of notes payable, accounts payable, and interest payable; and *reserves*, which include doubtful accounts, discounts on accounts receivable, and depreciation.

ASSET ACCOUNTS

4. It will be noted that in the preceding classification, the asset accounts have three principal classifications; namely, fixed assets or property accounts, current assets, and deferred charges.

The fixed assets, or property accounts, represent those assets of an enterprise which cannot readily be converted into cash.

Current assets represent those assets which are constantly changing and which can readily be converted into cash. This class of assets is sometimes referred to as *quick assets*.

Deferred charges represent expenses or other charges that are properly chargeable to future operations and that should not be entirely charged off during one period but should be prorated over several months or fiscal periods.

5. Fixed Assets. — The **real-estate-and-buildings account** is debited with the purchase price or with the cost of construction and is credited with the cost value of any property sold. The depreciation may be credited to the account directly, or it may be treated through the reserve account. The balance will represent the value of real estate and buildings in the possession of the enterprise. There may be an adjustment on this account to bring it in agreement with an appraisal. Changes in conditions and in the locality may make this adjustment necessary due to either an increase or a decrease in the value of the real estate and buildings as compared with what is shown by the books.

6. The **machinery-and-tools account** is debited with the purchase price or with the cost of construction of the machinery and tools and is credited with the cost value of any part that is sold. As in the case of real estate and buildings, the depreciation may be credited directly to the machinery-and-tools account or it may be treated through the reserve account. The balance will represent the value of the machinery and tools on hand. There may also be an adjustment on the account for the purpose of bringing the balance in agreement with an appraisal.

What is said regarding the machinery-and-tools account necessarily applies to the **furniture-and-fixtures account.**

7. Current Assets.—The **cash account** is debited with the total cash receipts and is credited with the total cash payments. The balance represents in total the amount of cash on hand and in banks, as shown in detail by the cash book.

However, if the cash on hand, or petty cash, is kept according to the imprest fund, the balance of the cash account would represent only the amount of cash in banks, as all receipts of cash are deposited in the banks and all disbursements are made by check by this system of keeping cash.

When the imprest fund is started, a check is drawn for a certain amount, generally fifty, seventy-five, or a hundred dollars, which is charged to a petty-cash account or an imprest-fund account in the general ledger. As the petty expenses are incurred, they are paid out of this amount, and as the fund becomes low a check covering the amount paid out for expenses is made out and cashed and is charged to the various expense accounts. This check added to the balance of cash on hand brings the imprest fund back to its original amount. Therefore, the amount as shown by the petty-cash account or the imprest-fund account in the ledger should always be accounted for, either by actual cash on hand or by vouchers representing expenditures.

8. The **notes-receivable account** is debited with the amount of notes received and is credited with the amount of notes paid, discounted, or returned. The balance represents the amount of notes on hand. If there are a large number of note transactions, a notes-receivable book would be kept and this account would deal with totals only.

In order to ascertain the contingent liability on notes receivable that have been discounted, it is a good practice when a note is discounted and the cash received to credit a notes-receivable-discounted account. When the note becomes due and is paid by the maker, the notes-receivable-discounted account is debited and the notes-receivable account is credited.

9. The **accounts-receivable account** is a controlling account for the customers' ledger and shows in total what is shown in detail by the customers' ledger. It is debited with the total sales chargeable to customers, as well as any other charges to customers, either the journal or the cash book, and is credited with the total cash received from customers, with the total returns and allowances to customers, and with any other credits or adjusting entries. The balance represents the amount due from customers and should agree with the total of a detailed list of balances taken from the customers' ledger.

When the business is large, it is well to divide the customers' ledger into sections, either alphabetically, as A–G, H–O, and

P–Z, or according to territory, as city and country ledgers. By having separate controlling accounts for each section, the preparation of a trial balance of the customers' ledger and the proof of the accuracy in posting can be facilitated.

10. The **consignment account** is a controlling account for the consignment ledger and shows in total what is shown in detail by the consignment ledger. In keeping this account it should be borne in mind that consignments should be charged in the books at cost and not at the selling price, as the entry is made merely to transfer the items from the regular stock account to the consignment account, in order to keep a record of the location of the finished stock.

Where consignments are active and where the accounts are numerous, especially in particular sections of the country, several controlling accounts may be kept, such as New York consignments, Boston consignments, Chicago consignments, etc., each one being supported, however, by a separate section showing the individual accounts.

11. Deferred Charges.—When the expense is incurred, the deferred-charges account is debited, and it is credited with the prorata share that applies to the current period. The balance represents expenses properly chargeable to future operations. The items generally treated as deferred charges are unexpired insurance, prepaid interest, unusual advertising charges, catalog expenses, etc.

LIABILITY ACCOUNTS

12. In the classification, it will be observed that the liability accounts consist of four general accounts; namely, capital or capital stock and surplus, funded debt, current liabilities, and reserves.

The capital account applies to an individual or partnership, and represents the net worth of the business. In a corporation, the net worth is represented by the capital stock, to which would be added the surplus, if any, and from which would be deducted the deficit, if any.

between the four complete cost systems without causing confusion by the explanation of a different method of distributing indirect expenses in each case. For instance, the first two systems both relate to a business in which the product is manufactured on special orders only, and in which it is desirable to obtain the cost on each order. In the first of these systems, the indirect expenses are distributed on the productive-labor method, and in the second on the new-machine-rate plan. The last two systems relate to a business in which product costs are desirable, and the same two methods of distributing indirect expenses are used in the systems so as to make the comparison marked and distinct. Other methods of distributing indirect expenses may be applied according to the conditions of manufacture.

PROCEDURE IN EXAMINING A PLANT AND INSTALLING A COST SYSTEM

12. Doubtless by this time it has been realized that the most important and essential requirement in cost finding, after a knowledge of principles and methods, is skill in the application of them to particular manufacturing conditions. After what has been stated about this subject, it must appear that the successful cost accountant or cost clerk or manufacturer who introduces a practical, workable cost system must have ingenuity and inventive and constructive ability; also, he must, to use a common expression, have enough common sense to drop theory when the particular case demands it.

As an illustration on this latter point, take, for instance, the manufacture of a straw hat. The material that enters into a straw hat consists of the *braid*, which is the straw; the *band*, which goes around the outside of the hat; the *sweat*, or the leather inside of the hat; the *lining*; and the *thread*. All these materials, according to one of the fundamental principles of cost accounting, should be charged as a direct or a prime cost; and yet, in this case, there is one element of the material cost that it would be very impractical so to charge. This material is the thread. The only way to take care of the

thread in a straw hat is to distribute the cost of the thread along with other departmental overhead, over the total number of straw hats produced, even though they may represent many different styles. This element of material cost is distributed as an indirect expense instead of as a direct-material cost, because it would cost more than the price of the thread itself to ascertain the amount entering into any number of a particular style of hats. This instance is cited to make emphatic the fact that there are many cases in which it is absolutely necessary to depart from fixed and standard principles if anything like a common-sense system is to be installed.

13. The fundamental principles of cost accounting, as a whole, are the same in every line of manufacturing, with such exceptions as those just noted; but the application of these principles and the method of gathering and compiling cost data are necessarily different in every line of business, and very frequently they are different even in plants conducting the same line of manufacture. Taking these facts into consideration, it is conclusive to say that in order to devise a practical and satisfactory cost system, a physical examination of the particular plant would be absolutely essential for the purpose of ascertaining not only the product manufactured, but the conditions under which the product is made. There are primarily three steps in the introduction of a cost system: (1) making a physical examination of the plant in question; (2) devising the system; and (3) installing the system.

14. In making the physical examination, the proper way is to begin with the operating departments of the plant and to end with the office records, and, in addition, the expert should, in all cases possible, have some one connected with the plant who has a practical knowledge of the business accompany him for the purpose of answering all questions that it may be necessary to ask.

In the examination of a manufacturing plant, the information should be divided into the following general divisions: (1) raw material; (2) machinery and processes; (3) direct labor; (4) indirect labor and supplies; and (5) general indirect.

are paid. The reserve is adjusted either by an increase or a decrease at the end of each statement period in accordance with a new estimate as to what amount of discount will be deducted.

22. The reserve for **depreciation** is credited at the end of each statement period with the amount set aside out of the profits to cover what is considered possible losses due to the wear and tear. Separate accounts may be kept for reserve for depreciation on real estate and buildings, reserve for depreciation on machinery and tools, and reserve for depreciation on furniture and fixtures.

NOMINAL ACCOUNTS

23. Sales and Cost-of-Sales Account.—The sales and cost-of-sales account is credited with the total amount of sales at selling prices, and it is debited with the total cost of sales. The balance represents the amount of gross profit on the goods sold. Of course, these may be separate accounts for each department or class of goods. For example, in a hosiery mill, separate accounts may be kept for men's hosiery, women's hosiery, and children's hosiery.

24. Selling- and Administrative-Expense Accounts. The selling expenses may be kept in one account that would be analyzed at the end of a fiscal period, or it may be well to keep separate accounts for each class of selling expense. The account or accounts would be debited with the amount of selling expenses incurred and would be credited with allowances. If a department system were in operation, the selling expenses would also be credited with the distribution of these expenses over the various departments and in that case the balance would represent a deferred charge, or, in other words, the amount of selling expenses not distributed. However, when this is not the case, the selling expenses are closed directly into the loss-and-gain account.

What has been said in regard to the selling-expense account necessarily applies to the administration-expense account or accounts.

25. Operating- or Factory-Ledger Account. — The operating- or factory-ledger account is the controlling account of the cost records. It is debited with the total of the individual items, as material, labor, and indirect expense, that go into the cost records, and it is credited with the total cost of sales. The balance of the account is a debit and represents the amount of material finished, in process, and raw, as well as the amount of factory or manufacturing expenses not distributed.

The balance of this account agrees with the balance as shown by the general- or private-ledger account in the operating ledger.

SUMMARY OF CLASSIFICATION OF ACCOUNTS

26. Time can be saved by having the operating-ledger accounts, and also the selling and administrative accounts designated by letters and numbers. Usually, all the operating departments are indicated by letters and the material, labor, and manufacturing expenses by numbers; also, all the selling expenses are indicated by the letter *S* being prefixed to a number and the administrative expenses by *Ad* being prefixed to a number.

The following classification of a certain kind of textile mill will serve to illustrate this plan:

OPERATING DEPARTMENTS

A—Sorting	F—Carding	K—Drying
B—Scouring	G—Spinning	L—Boarding
C—Carbonizing	H—Knitting	M—Finishing
D—Drying	I—Rib knitting	N—Boxing
E—Picking	J—Seaming	O—Packing

1—Material 2—Direct labor

MANUFACTURING OR OPERATING EXPENSES

3—Indirect labor	9—Taxes
4—Supervision	10—Maintenance
5—Supplies	11—Repairs
6—Light, heat, and power	12—Depreciation
7—Rent	13—Interest
8—Insurances	14—Incidentals

SELLING EXPENSES

S1—Advertising
S2—Rent, salesroom
S3—Salesroom expenses
S4—Commissions
S5—Traveling expenses
S6—Salaries, sales manager
S7—Salaries, salesmen
S8—Incidentals

ADMINISTRATIVE EXPENSES

Ad1—Salaries, officers
Ad2—Salaries, general-office clerk
Ad3—Rent, general offices
Ad4—Light and heat, general office
Ad5—Stationery and printing
Ad6—Legal expenses
Ad7 —Telegraph and telephone
Ad8 —Car fares and incidentals
Ad9 —Postage
Ad10—Subscriptions
Ad11—Donations
Ad12—Miscellaneous expenses

FINANCIAL FORMS AND RECORDS

27. Accounts-Payable Voucher.—The object of the accounts-payable voucher, two styles of which are shown in Figs. 1 and 2, is to combine a filing system with the bookkeeping in such a manner as to constitute a proper voucher for all merchandise purchased, all expenses incurred, as well as the pay rolls. To the accounts-payable voucher form should be attached the purchase order, the material-received sheet, and the creditor's invoice, or, in the case of pay roll, the pay-roll summary sheet. When the voucher is paid, the canceled check returned may be attached, but in any event the check number and the date of payment should be entered on the back of the voucher.

A separate voucher should be used for each concern from whom purchases are made, but if there has been a number of transactions with the same party during the month and if the accounts of the creditors are paid monthly, all the invoices for that month may be entered and attached to one voucher. The account and department chargeable should be entered on the back of the voucher so as to facilitate the entering of the vouchers in the register of accounts payable or the invoice book.

It might be found convenient to have the names and numbers of the accounts, as well as the departments printed on the back

of the voucher as shown in Fig. 2, so as to familiarize every one interested with the various accounts and the number by which they are designated, but the same purpose can be accomplished

ACCOUNTS PAYABLE VOUCHER

No._____

Favor of _____ Date_____

DATE OF INVOICE	DESCRIPTION	AMOUNT OF INVOICE	DEDUCTIONS	AMOUNT PAYABLE

Approved for Payment _____ Correct _____

FIG. 1

by having the classification of accounts printed and distributed to those interested in the accounts of the enterprise.

28. Register of Accounts Payable.—The accounts-payable vouchers are entered in the register of accounts payable, Fig. 3, according to date and number. The credit side

of the register shows the amount of the voucher, and the debit shows the distribution of the voucher. The postings from the register for the general or private ledger are as follows:

The total of the voucher-payable column is posted to the credit of the accounts payable or vouchers-payable account;

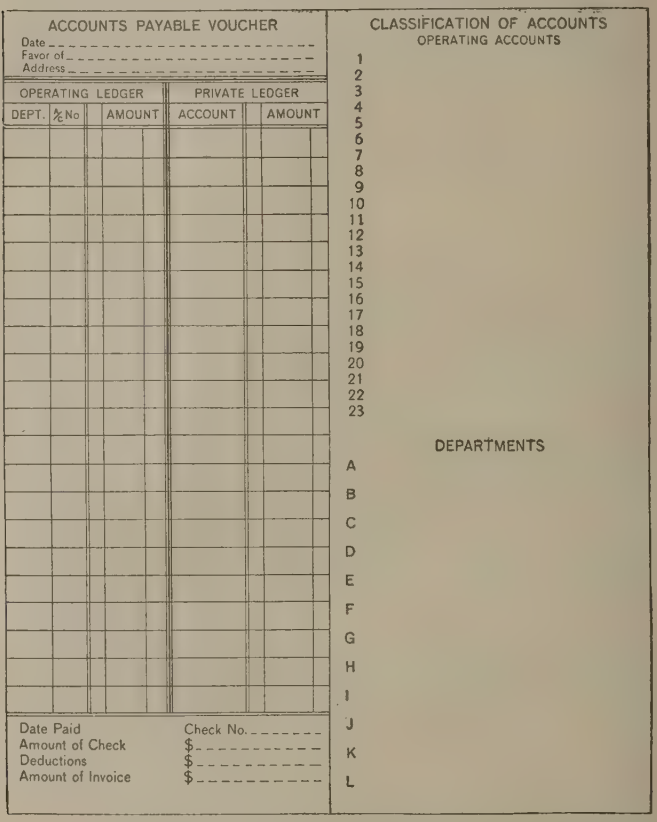


FIG. 2

the totals of the selling-expenses, administrative-expenses machinery-and-tools, real-estate-and-buildings, and furniture-and-fixtures columns are posted to the debit of their respective

REGISTER OF ACCOUNTS PAYABLE

For the _____ 19__

CREDITS									DEBITS										
ACCOUNTS PAYABLE						WHEN AND HOW PAID			MISCELLANEOUS ACCOUNTS			OPERATING LEDGER		SELLING EXPENSES		ADMINISTRATIVE EXPENSES		PROPERTY ACCOUNTS		
Date	Voucher No.	Favor of	Terms	Folio	Vouchers Payable	Date	Check No.	Bank	Name	Folio	Amount	% No.	Amount	% No.	Amount	% No.	Amount	Machinery and Tools	Real Estate and Buildings	Furniture and Fixtures

FIG. 3

accounts. The miscellaneous-accounts column is posted in detail to the debit of the account specified in each detail entry. The miscellaneous column is for such items as cannot be distributed in the other columns. However, if separate accounts were kept for each item composing the selling and administrative expenses, the selling and administrative-expense columns would have to be analyzed and posted in detail from a distribution book.

When a voucher is paid, the date, the check-number, and the bank upon which the check is drawn (if there are accounts with

A. B. CO.
MANUFACTURERS OF
STOVES, RANGES AND FURNACES

Sold to .....
Address ..... New York .....

DESCRIPTION				SELLING PRICE	
	CLASSIFICATION	ARTICLE	QUANTITY	RATE	AMOUNT

No. of Pkgs. ..... Shipped to ..... By Frt. .....
Ship. Wt. ..... Via ..... By Exp. .....
Frt. Rate ..... B/L in name of ..... Prepaid .....
Pkg. Chg. ..... Date Shipped ..... Col. .....

FIG. 4

several banks) are entered in the column provided for the payment; therefore, it will be unnecessary to keep personal accounts with creditors. The total of a list of the unpaid vouchers should agree with the balance of the accounts-payable controlling account. However, when the register of accounts payable is used instead of the purchase or creditors' ledger, it is well to keep an index of the voucher, so that any particular creditor's account can be easily located.

If no register of accounts payable is kept, the invoice or voucher would be entered in a purchase journal or invoice book, which would be ruled similar to the register of accounts payable, except that no columns would be provided for the payment of the vouchers. The postings from the purchase journal would be the same as those from the register of accounts pay-

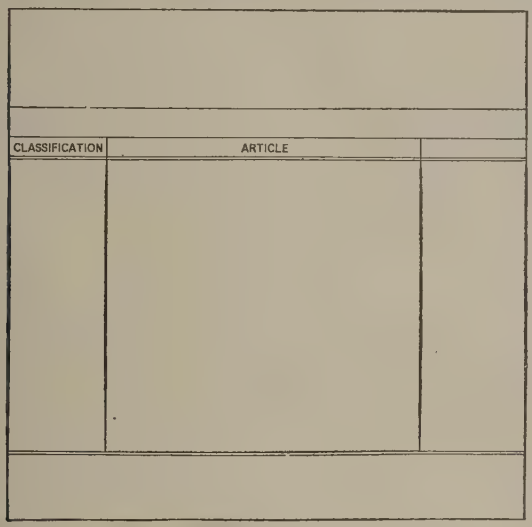


FIG. 5

able and, in addition, the vouchers-payable or total column would be posted in detail to the credit of the account with each creditor.

29. Bill and Credit Memorandum.—Figs. 4, 5, and 6 illustrate forms used in a system of billing, shipping, and costing the sales. The original, Fig. 4, is sent to the customer and the duplicate, Fig. 5, after being numbered, goes to the shipping clerk and serves the purpose of a shipping order. The cost of the article sold is entered upon the triplicate, Fig. 6, in the column provided for that purpose, after which these sheets are registered in a sales book that is so ruled as to show both the

selling and the cost price and also the distribution of the product sold according to departments. If the business is not divided into various sales departments, the sales sheets do not have to be registered; and in this case the sales for the month, both at a selling price and a cost price, can be totaled on an adding machine or carried forward from page to page. The amount of the individual sales sheets would be posted to the debit of the customer, and total sales at selling prices would be debited to the accounts-receivable account and credited to the merchandise-sales account in the general ledger. The total of the cost price would be debited to the merchandise-sales account and credited to the operating-ledger account in the general ledger.

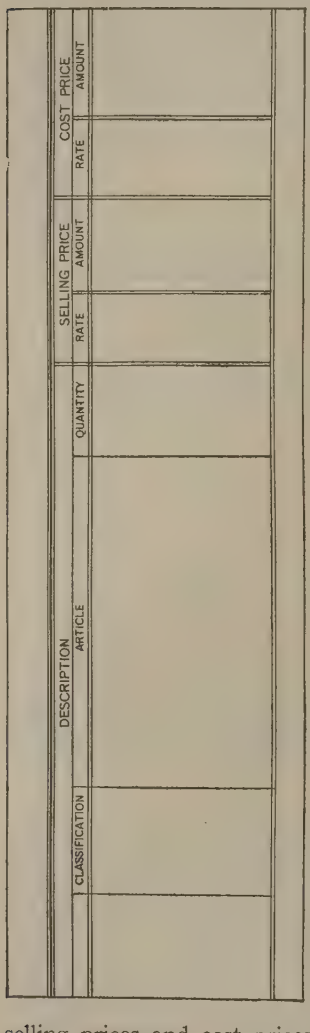
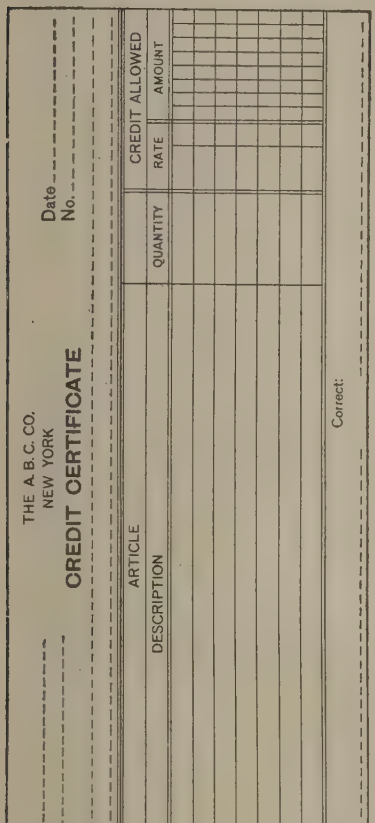


FIG. 6

In the factory ledger, the cost of sales would be credited to the various finished-stock or department accounts, and the total would be debited to the general- or private-ledger account.

Before any of these entries are made, however, the goods returned should be deducted from the sales made at both selling prices and cost prices. Allowances should be debited

to a separate allowance account and credited to the customer, there being no corresponding cost for such entries. The credit memorandum, or certificate, the original form of which is shown in Fig. 7 and the duplicate in Fig. 8, should not be issued until advice has been received from the receiving department to the effect that the goods have been actually returned and that the credit has been passed by some person in authority.


THE A. B. C. CO.
NEW YORK

CREDIT CERTIFICATE

Business
Salesman
Favor of
Address

Date
No.

ARTICLE		CREDIT ALLOWED	
DESCRIPTION	QUANTITY	RATE	AMOUNT

Approved:

Correct:

FIG. 7

30. Register of Sales and Costs. When the sales are classified according to the various classes of product sold, the sales sheets are entered daily in a register of sales and costs, Fig. 9. This record besides having columns for showing the classification of the sales, shows also the selling price, the cost price, and the gross profit on each sale. The credit certificates can be entered on this form in red ink, and in that case they would be treated as deductions, or they can be entered and treated on a separate sheet and deducted in total from the sales at the end of a period.

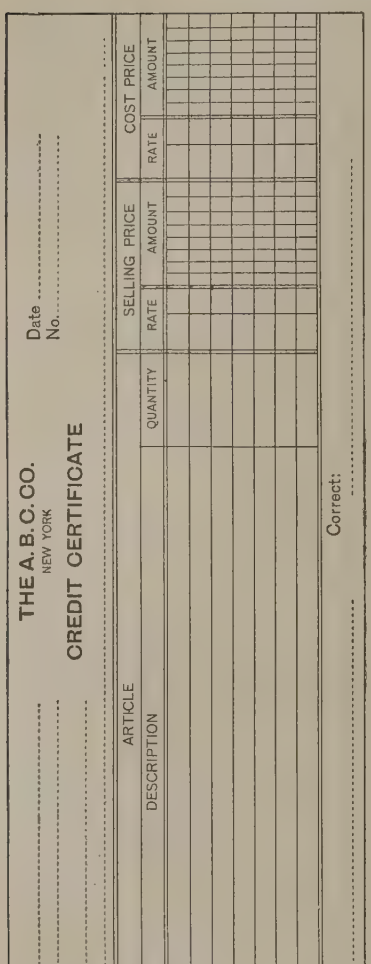


Fig. 8

The total of the accounts-receivable column is posted to the debit of the accounts-receivable account, while the details are posted to the debit of the individual customers' accounts.

The totals of the sales columns of A, B, and C are posted to the credit of the sales accounts of A, B, and C.

The totals of the cost-of-sales columns of A, B, and C are posted to the debit of the sales accounts of A, B, and C.

The total of the factory column is posted to the credit of the operating-ledger account.

In the operating ledger, the total of the factory column is posted to the debit of the general-ledger account, and the details of the factory column are posted to the credit of the various finished-stock accounts.

If the classification of the sales is extensive, it is advisable to keep a daily analysis of sales and cost similar to that shown in Fig. 10. The

REGISTER OF SALES AND COSTS

For the Month ..... 19....

SALES										COST OF SALES				GROSS PROFIT	
DATE	SALES SHEET NO	NAME	TERMS	SALESMAN	FOLIO	ACCOUNTS RECEIVABLE	A	B	C	A	B	C	FACTORY	AMOUNT	%

FIG. 9

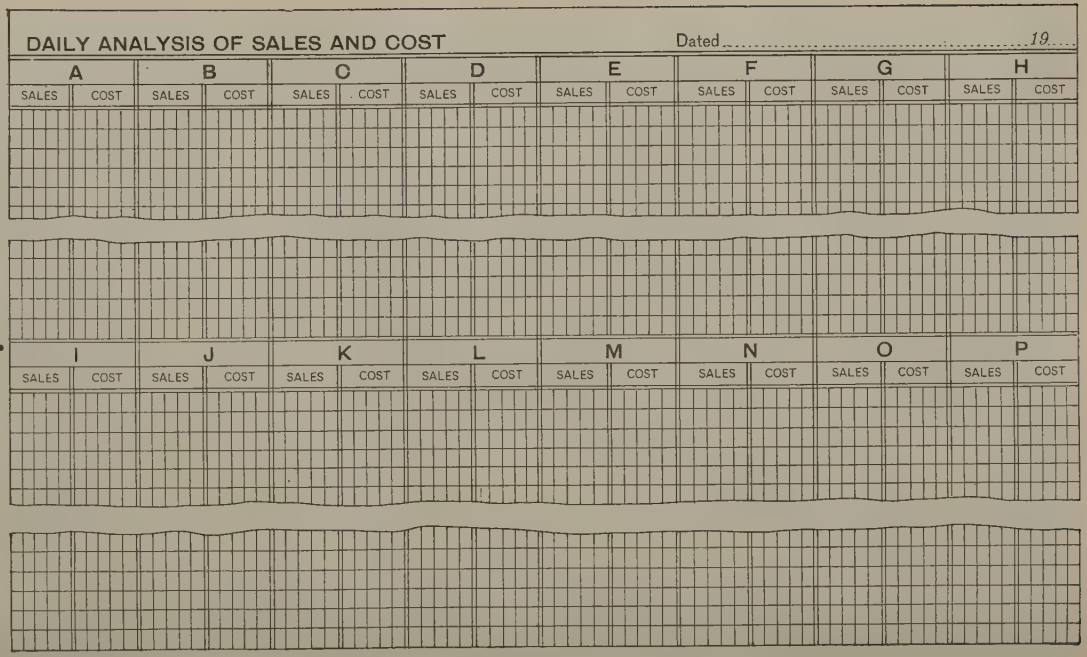

DAILY ANALYSIS OF SALES AND COST
Dated ..... 19....
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
SALES
COST

FIG. 10

debits to customers' accounts would then be posted from the bill or sales sheet, as only the daily totals would be entered in the register of sales and costs.

31. Cash Book.—In the form of cash book submitted, Fig. 11, columns are provided so that the deposits, the checks, and the bank balances for each bank, from day to day, can be constantly before the management. This eliminates the necessity of using the check-book stubs for deposits. This form of cash book can be used only when all receipts are deposited and all payments are made by check. However, if this were not the case, an additional column could be added on each side of the cash book, after the bank column, showing cash receipts (not deposited) and the payments out of currency on hand. The difference between these two cash columns would show the actual cash on hand. The columns provide for showing on the debit side the gross amount received from customers, the gross amount received from miscellaneous sources, the discount allowed, and the net amount deposited in the various banks. Likewise, on the credit side, provision is made for showing the gross amount paid to creditors, the gross amount paid for miscellaneous items, the discount deducted, and the net amount of the check drawn on either bank.

32. The posting to the general and private ledger, and subsidiary records are as follows:

On the Debit Side.—The details of the accounts-receivable column are posted to the credit of the individual customers' accounts, and the total is posted to the credit of the accounts-receivable account in the general ledger. The total of the discount column is posted to the debit of a discount-allowed account. The sundries column is posted in detail to the credit of the various accounts specified. The totals of the deposit columns are posted to the debit of the cash account.

On the Credit Side.—The details of the accounts-payable column are posted to the debit of the individual creditors' account, or entered in the register of accounts payable, depending on the system in use. The total of the accounts-payable column is posted to the debit of the accounts-payable account

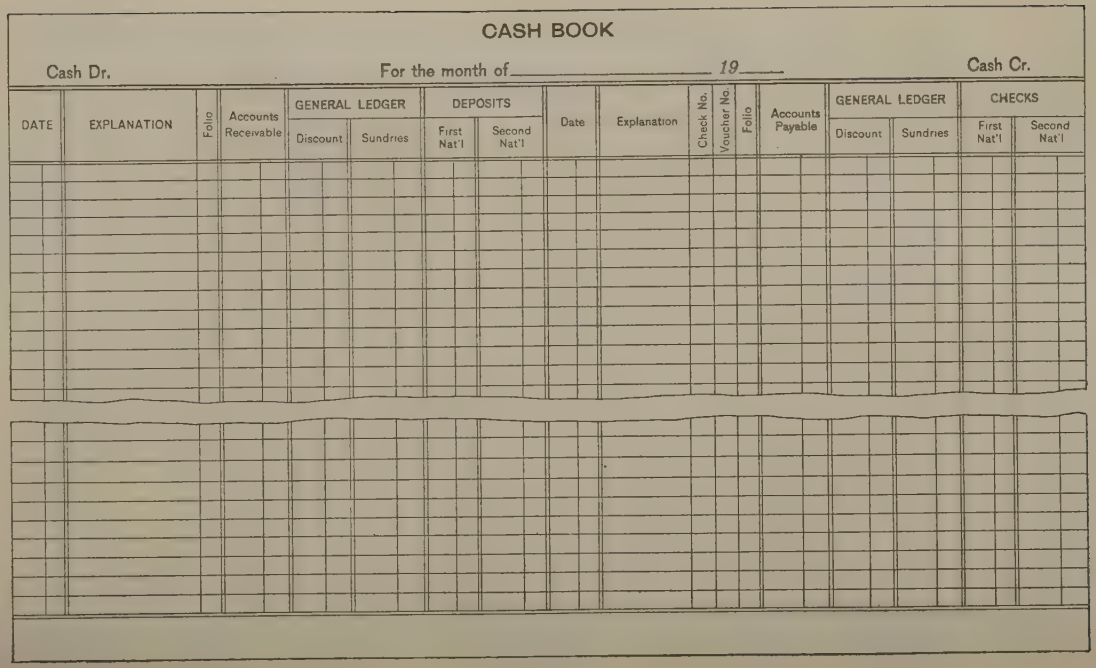

CASH BOOK
Cash Dr.
For the month of 19
Cash Cr.
DATE
EXPLANATION
Folio
Accounts Receivable
GENERAL LEDGER
Discount
Sundries
DEPOSITS
First Nat'l
Second Nat'l
Date
Explanation
Check No.
Voucher No.
Folio
Accounts Payable
GENERAL LEDGER
Discount
Sundries
CHECKS
First Nat'l
Second Nat'l

FIG. 11

in the general ledger. The total of the discount column is posted to the credit of a discount-received account. The sundries column is posted in detail to the debit of each account, as specified. The totals of the check columns are posted to the credit of the cash account, provided the accounts with the banks are not carried in the ledger.

35. Plant Card, Tool Records, and Drawings and Patterns Cost.—During the last few years the attention of the manufacturer has been called to the importance of making an appraisal of his plant and preparing a detailed record of the equipment and of its value. A matter such as this necessarily

No. ..... A. B. C. CO. Class .....
Size ..... PLANT CARD Building .....
Location ..... Room .....
Name .....
Description .....

DATE		QUANTITY	COST PRICE		INSTALLATION CHARGES		TOTAL COST	

Fig. 12

relates to factory organization; therefore, designs of various forms that will serve to show how a running inventory may be established in connection with the machinery and tools, as well as with patterns, drawings, and similar property, are illustrated in Figs. 12 to 15, inclusive. These forms are so ruled as to indicate the amount of the repairs relating to any particular machine or class of tools for any period. This information is especially valuable where old machinery is in use, because such machinery is sometimes more expensive to maintain than might appear; and although general accounts showing the total repairs to the entire plant are usually kept, the information obtained from the records kept on such forms

is more suitable for making changes or determining on the installation of new machines than a general record would be. Furthermore, the rate of depreciation can also be shown, which

WORKMAN'S TOOL RECORD

DESCRIPTION	SIZE	DATE RECEIVED	CONDITION	NAME OF WORKMAN

FIG. 13

rate should be based on the life of the machine in connection with the average operating time.

34. Where a regular tool room forms a part of the organization, tool records should be kept in about the same manner that stock records are kept; and these tools should be so classi-

DESCRIPTION	SIZE	DATE RETURNED	CONDITION	STOREKEEPER

FIG. 14

fied and arranged, not only in the records, but also in the tool room, as to show the quantity of tools on hand available for each particular class of machine. The bins or racks in the

tool room should also indicate the condition of repair of the tools, and tools that are not in repair or in perfect condition should be kept in separate bins apart and distinct from the tools recently sharpened or repaired. This can only be done by systematizing the tool room proper, and by inaugurating a tool-room system simple in design but nevertheless effective if properly operated.

35. Salesmen's Costs.—Fig. 16 shows a form used in a practical method of ascertaining the cost of the various sales-

DRAWINGS & PATTERNS Numbers:-
Drawing No. .....
Description..... Pattern No. .....

DATE	ANALYSIS OF COSTS	PENCIL SKETCH	TRACING	INK SKETCH	BLUE PRINTS	PATTERN	TOTAL
	Labor Time Rate Amount Supplies:-						
	TOTAL COST						

FIG. 15

men and territories. When properly filled out, this form will disclose valuable information to the sales manager and management. It contains columns for showing the sale, the cost of the sale, and the gross profit, the salary and commissions, the traveling expenses, and the net profit monthly for a period of 2 years. Provision is also made for showing the percentages, which are always valuable as a means of comparing one period with another or one salesman and territory with another.

SALESMEN'S COSTS

Salesman_____ Territory_____

FOR THE YEAR 19___	SALES		GROSS PROFITS		SELLING COSTS				NET PROFIT	
	Amount	Cost	Amount	%	Salary & Commission	Traveling	Total	%	Amount	%
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
Total for the year										
FOR THE YEAR 19___										
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
Total for the year										

FIG. 16

STATEMENT OF PROFIT AND LOSS — For the *month* ending *Jan. 31-* 1909.

DEPARTMENTS	SALES		GROSS PROFIT		EXPENSES						NET PROFIT	
	Amount	Cost	Amount	%	Selling	%	Administrative	%	Total	%	Amount	%
A	18 838 90	9 334 08	9 499 82	102.0	3 654 10	39 1	1 508 06	16.2	5 162 16	56.3	4 337 66	46.7
B	1 796 80	1 084 30	712 56	66.5	424 42		175 18		599 60		112 96	10.2
C	3 483 94	1 586 62	1 877 32	118.3	621 04		256 64		877 68		999 74	63.0
D	1 712 10	968 04	760 06	79.8	372 64		165 94		538 58		233 48	24.5
E	1 698 06	1 102 60	595 46	54.0	431 40		178 08		609 48		14 02	- 1.3-
F	883 38	419 72	463 66	110.5	164 28		67 84		232 12		231 54	55.2
G	3 791 90	2 324 44	1 467 46	63.1	909 64		375 82		1 285 46		182	7.8
H	1 247 68	568 04	679 64	119.7	222 34		91 86		314 20		365 74	64.4
I	6 538 92	3 154 18	3 384 74	107.3	1 234 62		509 80		1 744 42		1 640 32	52.0
J	2 745 24	1 585 62	1 159 62	73.1	624 44		256 08		880 52		279 10	17.8
K	842 68	469 68	373 90	79.5	183 84		76 84		259 68		113 52	24.2
L	544 76	270 68	274 08	101.3	105 94		43 72		149 66		124 42	46.0
M	16 070 42	8 106 44	7 963 98	98.2	3 172 88		1 309 08		4 481 96		3 482 02	42.9
N	844 38	561 44	282 94	50.4	219 76		90 74		310 50		27 56	- 4.9-
O	5 786 80	3 961 02	1 835 78	46.6	1 546 34		638 14		2 184 48		348 70	- 8.8-
P	678 36	354 20	111.0		124 92		51 68		176 60		177 60	56.7
From Operating												
All other Income and Expenses												
From all Sources	67 474 88	35 790 06	31 684 82	88 5	14 012 60		5 782 40		19 795		11 889 82	33.2

Approved: ..... Correct .....

FIG. 17

For..... Department

YEAR ENDING	SALES				EXPENSES						NET PROFIT		ALL OTHER INCOME AND EXPENSES			FROM ALL SOURCES
——19——	AMOUNT	COST	GROSS PROFIT	%	SELLING	%	ADMINISTRATIVE	%	TOTAL	%	AMOUNT	%				AMOUNT
BALANCE																
January																
February																
March																
April																
May																
June																
July																
August																
September																
October																
November																
December																
BALANCE																
Year 19																
January																
February																
March																
April																
May																
June																
July																
August																
September																
October																
November																
December																
BALANCE																

FIG. 18

COMPARATIVE BALANCE SHEET.

January, 31, 1909.

ASSETS Accounts	CURRENT MONTH Amount	CURRENT MONTH Amount	Increase or Decrease Amount	Increase or Decrease Amount	LIABILITIES Accounts	CURRENT MONTH Amount	CURRENT MONTH Amount	Increase or Decrease Amount	Increase or Decrease Amount
CURRENT ASSETS					CAPITAL STOCK		250 000 —		
Cash		6 008 43		1 010 75					
Notes Receivable		2 145 —		— 100 —					
Accounts Receivable		85 749 21		— 5 020 19					
Raw Material		36 457 24		10 263 66					
Material-Finished & In Process		49 552 30		4 042 62					
DEFERRED CHARGES.					CURRENT LIABILITIES:				
Selling Expense		2 741 92		192 67	Notes Payable		37 500 —		— 2 500 —
Administrative Expense		941 75		74 21	Vouchers Payable		42 408 70		1 734 58
PROPERTY					Pay Roll		4 721 95		642 81
Real Estate		60 000 —			RESERVE FUNDS:				
Buildings		120 476 90			For Discounts		4 287 46		— 266 01
Machinery & Tools		175 418 07		1 676 29	For Doubtful Accounts		500 —		
Factory Furniture & Fixtures		8 080 94		245 76	For Depreciation		2 400 —		300 —
Office Furniture & Fixtures		5 118 90		100 —	For Taxes		578 91		578 91
					For Interest		1 549 25		245 65
PATENTS, PATTERNS & DRAWINGS:									
Patents		7 500 —			MORTGAGE		100 000 —		
Patterns		12 645 —		146 —					
					SURPLUS		116 984 57		
					NET PROFIT for the current fiscal year to date		11 889 82		11 889 82
Total Assets		572 764 66		12 629 76	Total Liabilities		572 764 66		12 629 76

FIG. 19

The information for the filling out of this form can be taken from the bookkeeping and cost records. The results shown by a form of this kind may be summarized by entering all salesmen's accounts on one sheet showing the results obtained by each for the month, which information may be used to advantage in the adjustment of salaries or commissions.

36. Monthly Profit-and-Loss Statement.—The nature and size of the business as well as the wishes of the management will determine the kind of a monthly profit-and-loss statement to be prepared. Fig. 17 shows a statement of profit and loss that is prepared from the general or private ledger. The sales are classified according to selling departments from A to P. The first two columns show the sales and cost of sales, and the difference between these columns, or the gross profits, is shown in a third column. Then follows a section for showing the expenses, which are divided into selling and administrative expenses, and in the last column is found the net profit.

This statement might be supported by detailed schedules of the selling and administrative expenses showing the distribution over the selling departments of each item composing these classes of expenses.

Provision is also made in this statement for showing the percentage of the gross profit, selling expenses, administrative expenses, and net profit on the cost of sales. These percentages are very valuable as a means of comparing the different department results, as well as the results of various periods.

37. Department Comparative Profit-and-Loss Statement.—Fig. 17 is a comparative department profit-and-loss statement showing monthly totals only. The total results of all departments may be summarized on a form similar to that shown in Fig. 18 for the purpose of showing and comparing the total results of the entire business.

38. Balance Sheet.—Fig. 19 illustrates a balance sheet made out for the end of a current period in which provision is made for showing the increases or decreases of the assets and liabilities over the previous period. This form of balance sheet is very valuable, because with the figures in the increase or

decrease column it is possible to make out for the manufacturer a statement showing what has become of profits that are made. Fig. 20 will serve to illustrate how a statement of this kind can be made from the figures contained in the balance sheet shown in Fig. 19.

STATEMENT SHOWING THE DISPOSITION OF THE NET PROFIT FOR THE MONTH OF JANUARY, 1909

Increases in assets:		
Cash	$ 1,010.75	
Raw material	10,263.66	
Material, finished and in process	4,042.62	
Deferred charges	266.88	
Machinery and tools	1,675.29	
Furniture and fixtures	345.75	
Patterns	145.00	$17,749.95
Decreases in liabilities:		
Notes payable	2,500.00	
Reserve for discounts	256.01	2,756.01
Total increases in capital		$20,505.96
Deduct:		
Decreases in assets		
Notes and accounts receivable	$ 5,120.19	
Increases in liabilities		
Vouchers payable and pay roll	2,377.39	
Various reserves	1,118.56	
Total decreases in capital		8,616.14
Net profit for the month of January, 1909		$11,889.82

FIG. 20

COST ACCOUNTING
(PART 6)

GENERAL INTRODUCTION TO SYSTEMS

PRINCIPLES AND METHODS

1. In presenting the following graded set of cost systems, use is made of only those principles and forms which have been in actual operation in either large or small factories, or in both; therefore, these systems, as well as the forms appearing in connection with them, do not in any case represent what might be done, but, rather, what has actually been accomplished.

These systems and forms should be taken up in the order in which they appear, as the arrangement is made with the idea of calling attention to the things that one should be familiar with before attempting to master the next subject. In this manner, it should not be difficult for any one at all familiar with the principles of bookkeeping and the conduct of business generally to grasp the subject matter contained in them.

2. In presenting the several topics, it is necessary to use to a certain extent the same phraseology in explaining the application of the same principles or forms to different conditions; if different words or phrases meaning the same thing were used, confusion might result.

Many of the forms of the same class appear to be alike, with slight changes in the ruling or arrangement. These small differences are not always of importance and are used

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purposely to suggest how to effect changes in detail; but it is not well to go entirely on that assumption, as careful scrutiny will show that in most cases the differences are more material than they appear to be on the face. The object in view is to cultivate the ability to choose or to design forms that will be adaptable to the line of business and the particular conditions of manufacture that are under consideration.

3. One of the common mistakes made by business men who attempt to design a cost system without the assistance of a technical man or an experienced systematizer is to produce a form so specific as to admit of no change whatever. In such cases, a small omission here or there makes it impossible to use the form; whereas, if the form were general in character, the difficulty would disappear. Such forms are usually so arranged as to obtain information for one particular purpose only, and for this reason it is impossible to use them in the compilation of general results, or to utilize the information furnished for any further purpose.

It should be borne in mind that information on one particular subject cannot be gathered without at the same time procuring information that can be utilized in other ways. As an illustration, it would not be possible to obtain a list of the material used in manufacturing, chargeable to a particular order or product, without at the same time gathering information of use in running a stock system; and this same principle holds true in compiling any and all information relating to cost accounting.

4. Although a technical man, that is, the average public accountant, cannot possibly design and install factory systems purely from accounting principles, the manufacturer, on the other hand, cannot, with the knowledge concerning only manufacturing, devise a satisfactory system. He must, in addition, possess the technical knowledge of the public accountant as to theory and underlying principles. This fact, it might be stated, explains why the accountant is so often unsuccessful in installing systems and also accounts for the failure of the manufacturer in his own efforts to obtain reliable results along

these lines. Neither understands the other and the difficulties that are encountered.

The object of these remarks is to show how important it is for the systematizer to understand the position of each. To be able to apply his principles and theories in a manner that will provide for the results without interfering with production or seeking to obtain information in a way that is wholly impracticable, the systematizer must know the principles and practice of accountancy thoroughly, and must be familiar with the conditions of manufacture and the difficulties involved.

5. In order to assist those who, instead of using an actual cost system, estimate their costs and keep their general accounts in the books in such a way as not to know how accurate these estimates are, certain methods of verification are described under the heading Primary Cost System.

These methods are presented with the idea of enabling a manufacturer to satisfy himself as to whether these estimates are near the truth or not; and, if so, whether the discrepancies in the estimates are of such a nature or of such an extent as to cause alarm. The principles involving the verification of estimated costs are explained by illustrating the most simple method of ascertaining the facts, consistent with accuracy; and from this simple method, using the same principles, two more extensive plans are described, these three methods being calculated to outline in what ways the inaccuracies occur.

6. After all the facts have been determined and it is known wherein the estimated costs are incorrect, then it must be decided what action should be taken. Attention is called to the fact that if these estimates are at fault in estimating material costs, and an investigation reveals the fact that these estimates cannot be more carefully calculated by the existing methods, a stock system should be installed. If, on the other hand, the results show that the difficulty lies in labor estimates in any one department, then a cost system should be installed in that particular department. In the event that all the results are shown to be unreliable, a complete cost system should be installed in all departments, to be operated for a

certain period of time, at least, so as to obtain the information that will make it possible to revise estimates and to make such changes in selling prices and in manufacturing methods as the case requires.

7. The primary cost methods are not cost systems in the true sense, because they do not provide for finding the cost of any order, article, or class of articles. The best that can be had from them is a verification of the estimated costs in a lump sum for each element, material, labor, and overhead.

The *departmental cost system*, which is described later, forms an intermediate step between the verification of estimates and a complete cost system. The purpose of this system is to determine the cost of manufacture of general classes of product, though not of the unit order or article. Therefore, it must be kept in mind that the word *department* as here used has no reference to operating departments, but means the classification of product; that is, each kind or class of product is considered as the department in the accounts.

8. The advantages of a departmental cost system are that much of the detail work necessary in an actual cost system is avoided, and that the results give true costs as far as they go. The great disadvantage of such a system is that much information relative to particular articles is hidden in the generality of results, which means that some articles of a class may be made at a gain and others at a loss without the management knowing the difference. In such cases, the losses on one set of articles must be paid out of the profits on the other classes, the results showing only the general profit or loss on the whole.

However, one of the objects of trying a departmental system is to find out whether a more detailed system is necessary. When certain departments show a profit and other departments a loss, a detailed cost system should be inaugurated at least in those showing the loss, which may extend in time to all the departments of the factory.

9. It should not be inferred from the foregoing remarks that a *complete cost system* is more or less undesirable if the more

elementary systems seem to work out very well. No matter what the returns in the elementary systems may be, the saving and increased profit coming from a complete system will justify a liberal expenditure in that direction.

The importance of this subject is generally conceded, but at the same time actual cost work is much neglected. The only explanation is that either the business man and his assistants are not able to inaugurate such a system, or the expense that might be involved prevents them from taking any action in this direction. This is the only logical explanation in which the importance of the matter is conceded, and it admits of no argument or difference of opinion. Experience has clearly shown that where an actual cost system is properly designed and installed, and where the information furnished is intelligently used in connection with both the sales department and the factory, the installation is wholly justified by the results. The expense of installing and keeping such records is so small in comparison with the saving as to be absolutely an unimportant factor, when the net results derived are taken into consideration.

10. Under the subject of compilation of cost data, attention is called to the four general types under which all complete cost systems must be classified; namely, (1) a special-order system based on productive labor; (2) a special-order system based on process or machine costs; (3) a product system based on productive labor; and (4) a product system based on process or machine costs.

Later each general type of system is described and suitable forms are suggested. The importance of thoroughly understanding the principles and conditions of these systems cannot be overestimated, and all the forms shown should be studied so as to give a knowledge of how to apply the principles from a system standpoint to the conditions existing in any particular business.

11. It will be observed that only two methods of distributing indirect expenses are used in illustrating the systems. This is done so as to show clearly the essential differences

between the four complete cost systems without causing confusion by the explanation of a different method of distributing indirect expenses in each case. For instance, the first two systems both relate to a business in which the product is manufactured on special orders only, and in which it is desirable to obtain the cost on each order. In the first of these systems, the indirect expenses are distributed on the productive-labor method, and in the second on the new-machine-rate plan. The last two systems relate to a business in which product costs are desirable, and the same two methods of distributing indirect expenses are used in the systems so as to make the comparison marked and distinct. Other methods of distributing indirect expenses may be applied according to the conditions of manufacture.

PROCEDURE IN EXAMINING A PLANT AND INSTALLING A COST SYSTEM

12. Doubtless by this time it has been realized that the most important and essential requirement in cost finding, after a knowledge of principles and methods, is skill in the application of them to particular manufacturing conditions. After what has been stated about this subject, it must appear that the successful cost accountant or cost clerk or manufacturer who introduces a practical, workable cost system must have ingenuity and inventive and constructive ability; also, he must, to use a common expression, have enough common sense to drop theory when the particular case demands it.

As an illustration on this latter point, take, for instance, the manufacture of a straw hat. The material that enters into a straw hat consists of the *braid*, which is the straw; the *band*, which goes around the outside of the hat; the *sweat*, or the leather inside of the hat; the *lining*; and the *thread*. All these materials, according to one of the fundamental principles of cost accounting, should be charged as a direct or a prime cost; and yet, in this case, there is one element of the material cost that it would be very impractical so to charge. This material is the thread. The only way to take care of the

thread in a straw hat is to distribute the cost of the thread along with other departmental overhead, over the total number of straw hats produced, even though they may represent many different styles. This element of material cost is distributed as an indirect expense instead of as a direct-material cost, because it would cost more than the price of the thread itself to ascertain the amount entering into any number of a particular style of hats. This instance is cited to make emphatic the fact that there are many cases in which it is absolutely necessary to depart from fixed and standard principles if anything like a common-sense system is to be installed.

13. The fundamental principles of cost accounting, as a whole, are the same in every line of manufacturing, with such exceptions as those just noted; but the application of these principles and the method of gathering and compiling cost data are necessarily different in every line of business, and very frequently they are different even in plants conducting the same line of manufacture. Taking these facts into consideration, it is conclusive to say that in order to devise a practical and satisfactory cost system, a physical examination of the particular plant would be absolutely essential for the purpose of ascertaining not only the product manufactured, but the conditions under which the product is made. There are primarily three steps in the introduction of a cost system: (1) making a physical examination of the plant in question; (2) devising the system; and (3) installing the system.

14. In making the physical examination, the proper way is to begin with the operating departments of the plant and to end with the office records, and, in addition, the expert should, in all cases possible, have some one connected with the plant who has a practical knowledge of the business accompany him for the purpose of answering all questions that it may be necessary to ask.

In the examination of a manufacturing plant, the information should be divided into the following general divisions: (1) raw material; (2) machinery and processes; (3) direct labor; (4) indirect labor and supplies; and (5) general indirect.

15. Under the classification of *material*, knowledge should be had of all the different classes of material that are used directly in the manufacture of an article, the method of receiving material—and by this is meant not only the matter of recording but the method of handling the material—and the question of storeroom accommodation. In many lines of business, practically all material may be stored in stock rooms, but there are other cases where this is impracticable. In the case of pig iron, for instance, it would be necessary to have this material located convenient to the cupola. Other things to be considered in connection with a storeroom are the value of the material and its bulk or size, and whether the material is to be used through the medium of a bill of material or a material requisition.

The next step is to ascertain the method of putting the material into operation and taking care of waste, shrinkage, etc.

16. Under the general classification of *machinery and processes*, the information to be obtained must be such as to give one a knowledge of the different classes of machinery or processes and the average and maximum efficiency of each; also, the question as to whether they are automatic or not should be considered in this connection.

From the time that the material is started into process it should be followed through the various operations until it goes either into the storeroom or into the shipping room as a finished product.

Every manufacturing plant should be divided into a number of operating departments; in the majority of cases, these departments are determined by the expert with the assistance of the manager. An operating department is composed usually of a part of the plant in which all the processes are of the same general nature.

17. The *direct labor* and the *machinery* of each operating department may now be taken up. The number of machines should be known, as should also their cost and the number of workmen both direct and indirect in each operating department. In connection with the operating departments, there

should also be ascertained not only the amount of indirect labor that is applicable, but also the nature of the supplies that are peculiar to each department.

18. The next classification to be prepared would be the *general indirect expenses* of the plant, and by this is meant that class of labor and supplies and fixed charges which cannot be properly charged to any particular operating department.

There are two conditions in manufacturing that must be clearly known so far as the material is concerned. There are certain cases where the material passes through a few or all operating departments of the plant and is continuous until it becomes a finished product ready to be shipped. On the other hand, in perhaps the majority of plants, the material is made into finished parts, and these parts go into the storeroom as *partly finished stock*. They may either be sent directly to the assembling department or have other operations added at some future date. In all such cases where partly finished stock is made, it would be taken out of process with all the cost bearing thereon, including the indirect, and carried in the storeroom at that cost.

19. After the examination of the plant is finished, the expert may commence with the office records that are available. There are times when this data is of no use whatever, and in these cases reliance must be had entirely on the examination as made; but, in most instances, there will be found in the office much matter that will be of assistance in helping to determine the best methods to use in connection with gathering and compiling the data.

20. A very important phase in connection with the devising of a cost system, is the office organization. Before the kind of system is determined on, it should be known to what extent the present organization is able to handle any new plans that may be introduced, and whether or not the management would be willing to employ extra efficient help to take care of the details of a complete system if one were devised. A great many cost systems have been thrown out after being introduced

simply because they were top-heavy for the office organization to handle.

It is frequently advisable to put into a plant the simplest kind of a system, and then to amplify this system at later periods, as the conditions of an organization may demand. The question may be asked as to whether a complete cost system should always be recommended for all manufacturing businesses, large or small. The answer is decidedly "No." If it were also asked as to where the line should be drawn, the answer is that it would depend not only on the size of the plant but on the office organization.

21. There are many manufacturing industries in which it is good policy in the improvement of their cost records first to work along the lines of the least resistance instead of attempting to reach the maximum results at once. It is sometimes good business policy to repair a machine instead of throwing it out, and in the case of installation of modern machinery, to make the introduction gradually instead of installing a lot of new machinery without the organization to take care of it.

Carrying the last thought in mind, it should be clear why estimating cost systems are considered here. The estimating methods do not show the manufacturer how to figure his costs, but help him to determine whether or not his estimates are as accurate as he supposes. If the proper accounting checks are made on the estimating cost records, it will at least have the purpose of demonstrating whether or not the estimates are reasonably accurate.

If it should appear that these estimates are much different from the facts, there is only one logical step to be taken, and that is to go one step higher. This leads to the first element in actual cost finding, and the simplest one so far as actual cost systems are concerned. This system would be properly termed a *departmental cost system* (departmental only in the sense that the actual costs are shown on classes of product and not on an article).

The principal objection advanced by the average manufacturer to the inauguration of a complete cost system, is the

extra amount of detail involved in the compilation of the data necessary to obtain the actual cost of each article, which detail usually necessitates an enlargement of the office force; and, as previously stated, one of the objects of the department system is to indicate to the manufacturer whether, in his particular case, a system involving such details is necessary or not.

PRIMARY COST SYSTEM

FIRST METHOD

22. The primary cost system here outlined is based on the annual verification of the three elements of cost, namely, material, labor, and indirect expenses. Three distinct methods are brought out. Naturally, in outlining a system of verifying estimated costs at inventory periods, and endeavoring to show in which element of cost the estimates are wrong, or to prove their accuracy, the simplest condition is at first presented, together with the information as to how to extend, or add to, the primary cost system such other methods as will carry the principle of proof up to the point where the elements of an actual cost system would be introduced.

23. Inventory Sheet.—The first step in the primary cost method is the valuation of the inventory at the time the system is introduced. In Fig. 1 is shown a blank form that may be used in dividing the value of the inventory so far as it relates to raw material, goods in process, and finished stock, into the three elements, namely, material, labor, and indirect. In the case of raw material, only the material column would be used.

As an illustration, suppose that a certain article costs \$1.50, according to the schedule of estimated costs, which cost consists of 75 cents for material, 50 cents for labor, and 25 cents for indirect expenses, and that four of these articles are shown in the inventory. The entry on this inventory sheet would be \$3 for material, \$2 for labor, \$1 for indirect expenses, and

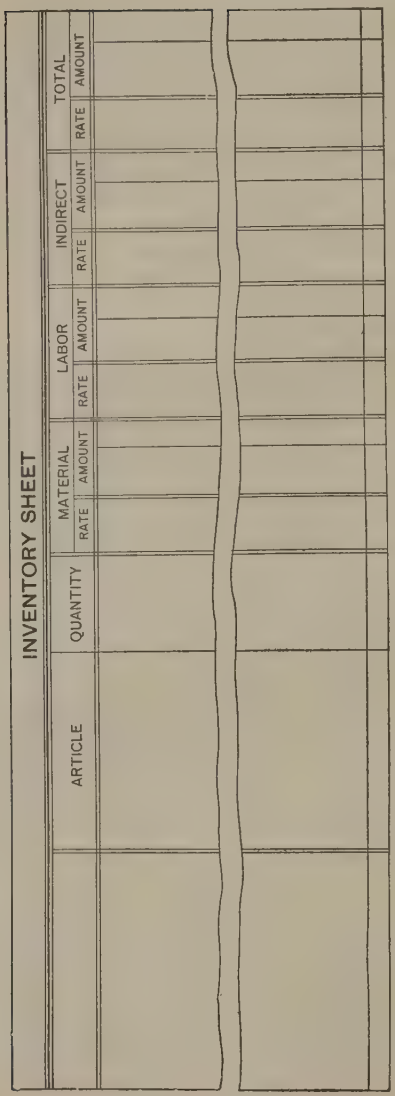


Fig. 1

$6 for the total cost of the articles. After all the articles have been priced in this manner and the total ascertained, the inventory should be reentered in the ledger to the debit of each of these three accounts; that is, if the total inventory amounted to $10,000, of which $6,000 was represented in the first cost of material, $3,000 in labor, and $1,000 in indirect expenses, these amounts are the ones that should be entered in the ledger to the debit of the corresponding accounts.

24. Schedule of Estimated Costs. The estimates of the costs are recorded in a form termed the *schedule of estimated costs*, which is illustrated in Fig. 2. A form of almost any design similar in character to this one can be used as a record of the estimated costs for all of the articles

manufactured. If desired, it may be in the form of a card with columns provided for each month in order to record changes in either material cost or labor cost; but the same principle and the same information should appear in order to carry out the plan of verification.

The prices shown in this schedule are the ones that should be used in pricing the inventory, not only at the beginning of the period, but also at the end of the period; and these same prices are used in connection with entering the cost price on the analysis of cost of sales, which is next explained. For this reason, whatever form is used, it should be convenient and specific in design.

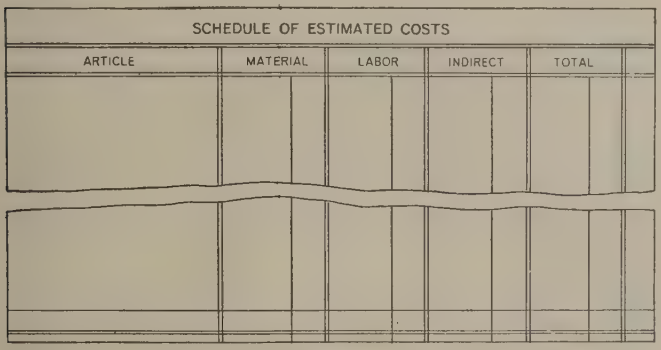


FIG. 2

25. Analysis of Cost of Sales.—In Fig. 3 is shown the analysis of cost of sales. It should be observed that in the simplest primary method only three forms are used.

Since the quantity and kind of goods sold constitute a prominent part of this plan of verification of estimated costs, it will be necessary to prepare a statement showing all the articles sold between the time the inventory was first taken and the time that the inventory was taken at the close of the period. An inventory can be taken, of course, at any time during the year when it is desired to verify the estimated costs. After this schedule has been prepared and the total quantity of each article sold ascertained, the cost price of the three elements

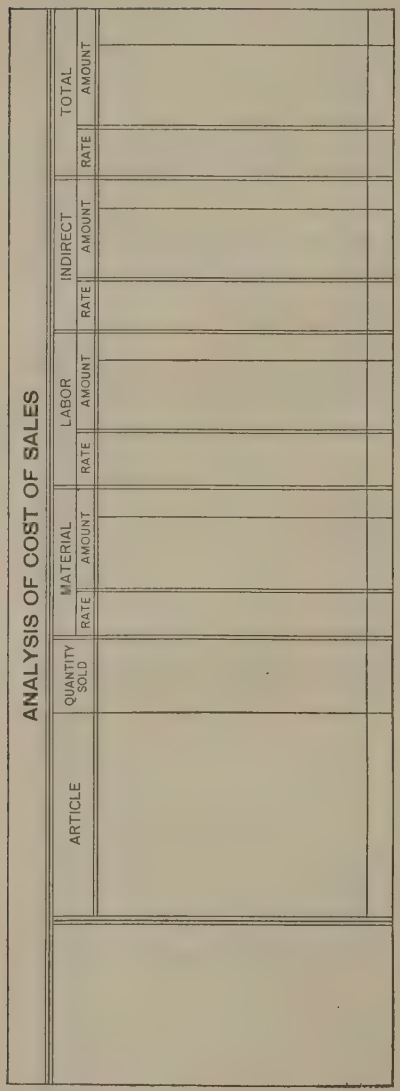


FIG. 3

shown in the schedule of estimated costs should be entered in the three columns provided for material, labor, and indirect expense, and the total costs of each one of these elements should be extended in the amount columns for the quantity of each article sold. The amounts of these three elements should then be entered in the total cost column, after which all the columns should be added to ascertain the totals of each element as well as the final total cost.

26. Plan of Verification.—Since the totals of the three elements entering into the cost of production, as shown in the inventory at the time this system was started, have been charged against these three elements in the ledger, and as the purchases of materials, exclusive of general supplies, have been

charged against the material account during the inventory period, and as the same is true in the case of the labor account and the indirect expense account, it is clear that, if these accounts are credited with the inventory at the end of the period according to the same classification, the difference between the two sides of the account will show the cost of material, labor, and indirect expenses expended in the manufacture of goods actually sold. These same items of cost are shown by the analysis of cost of sales.

Consequently, if the estimates are correct, the total amount shown for material, labor, and indirect expenses in this analysis of cost of sales should agree with the balance of each of these accounts in the ledger. If the ledger balance for any account exceeds the amount shown in the analysis of cost of sales for the same account, the difference will mean that the estimated-cost figures are too low by exactly the amount of this difference. If the reverse is the case, it will mean that the estimated costs are higher than the costs as figured. The manufacturer may judge for himself, according to the result considered in connection with trade conditions, which is the more detrimental to his business.

27. In charging labor to the labor account, it should be kept in mind that this term means such charges relating to manufacture as are supposed to be included as labor in the estimate of costs. Likewise, in classifying or charging expenses to the indirect-expense account, it should be remembered that this account must include indirect or general labor not charged to the labor account or included in the estimates of cost as labor, as well as such supplies as are not included in the estimates of material costs. The term *indirect expense* in this instance means all expenses relating to manufacturing only, and covers all items that are used in making estimates of costs. Several expense accounts, such as rent, insurance, indirect labor, supplies, and other items of this nature, may be kept in the ledger, and these accounts transferred when the books are closed to the indirect-expense account proper, so as to show the total for purposes of verification.

28. If it is desired to incorporate the verification figures in the ledger, the entry would be as follows: Credit these accounts (that is, the material, labor, and indirect expense accounts, respectively) with the total cost of all the amounts shown in the analysis of cost of sales; and in the same entry charge the total of these three amounts to the sales account, which account will then show the gross profit, based on the estimated-cost calculations. After this has been done, the three accounts mentioned will show the theoretical inventory in each of these accounts, based on the estimated cost.

These balances should then be compared with the actual inventory at the end of the period showing the total material, labor, and indirect expense. If the theoretical inventory exceeds the actual, the difference should be credited to these accounts and the total amount charged to the sales account, which account will then show the actual gross profit instead of the estimated gross profit. If the reverse is the case, the entry would be reversed, and the result would mean an extra gross profit. If the manufacturer has sufficient confidence in his estimates of costs and desires to have his bookkeeper prepare a monthly statement showing the profits based on these estimates, these entries may be made monthly instead of at inventory periods, and any differences in the results adjusted at the end of the year.

SECOND METHOD

29. Inventory Sheet.—In the primary method just described, it will be noted that only the three elements of costs, namely, material, labor, and indirect expense, are treated as applying to the total costs of the factory, regardless of operations, processes, or shop orders. If it is desired to carry a step further the primary method for the purpose of analyzing into divisions the three elements, in order that more light may be obtained on the proof of the estimates, a form like that shown in Fig. 4 would be used. This form, as will be observed, divides the material into three divisions and the labor into three divisions. Instead of the heading Operation,

INVENTORY SHEET

Department

ARTICLE	QUANTITY	MATERIAL								LABOR								INDIRECT		TOTAL	
		OPERATION No.1		OPERATION No.2		OPERATION No.3		OPERATION No.1		OPERATION No.2		OPERATION No.3									
		RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT

FIG. 4

however, Department or Classification may be used if desired. The distinctive feature of this method is that the first two elements of costs are subdivided and analyzed so as to show or to check the proof of the estimated costs into classes of material and labor, the indirect-expense method remaining precisely the same as before

After the total amount of the entire inventory has been ascertained, separate accounts should be opened in the ledger with each class of material and the labor in each department, as well as the account for indirect expenses. The totals of this inventory should be entered in each of these accounts in order to provide for verifying each of them when an actual inventory is taken.

30. Schedule of Estimated Costs.—In the schedule of estimated costs, shown in Fig. 5, both the material and the labor column are divided into three parts, representing the three classifications.

This classification of material and labor should be identical with that in the inventory sheet. The same classification, after having once been established, must not be changed under any circumstances unless all are changed, as it would prevent verifying the estimated cost. The remarks relating to the schedule and explaining how the information should be used apply in this case, as before. The cost prices to be entered on this schedule are the estimated costs that it is desired to verify,

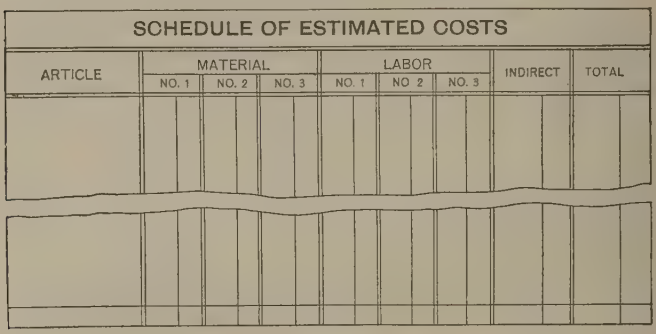


FIG. 5

and it is assumed that a record of these prices is already in the possession of the management and is in such shape as to be easily dissected or analyzed.

31. Analysis of Cost of Sales.—In the second method, the analysis of cost of sales would be divided into the three classifications in the same manner as the inventory sheet and the schedule of estimated costs. Fig. 6 shows how such an analysis of cost of sales would appear.

32. Purchase Journal.—In order to facilitate the itemizing of the three classifications, it would be well to introduce a purchase journal similar in form to that shown in Fig. 7. This book provides that material be classified according to the

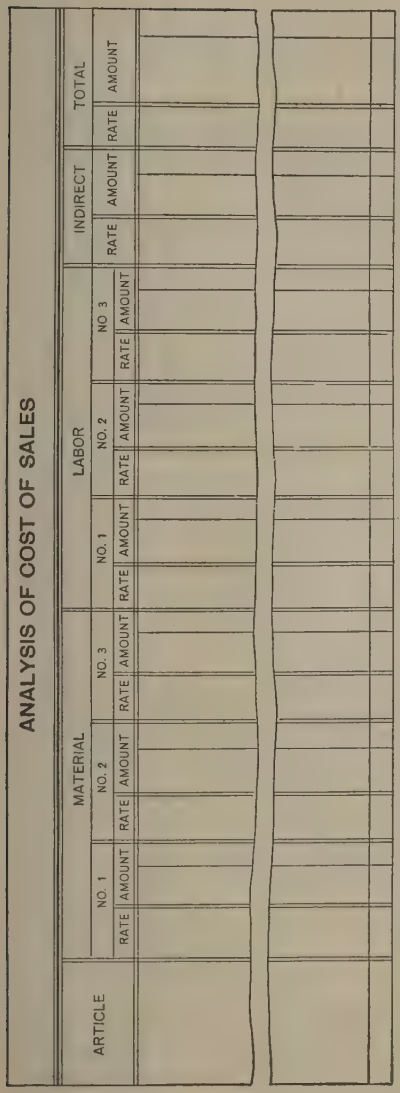


FIG. 6

captions shown in the inventory sheet. Purchases are entered in this record to be posted to the credit of the various accounts for individuals and companies from whom goods are bought, and the amounts of these purchases are distributed and entered in their respective columns, which, in effect, classifies the purchases according to the accounts already opened in the ledger. At the end of the month the totals of these columns are posted to the debit of the account appearing at the head of the column.

33. Pay Roll. As the labor is also divided into departments, a pay-roll form like that shown in Fig. 8 is suggested for this purpose. This form shows in total the amount of each employe's pay in each operating department,

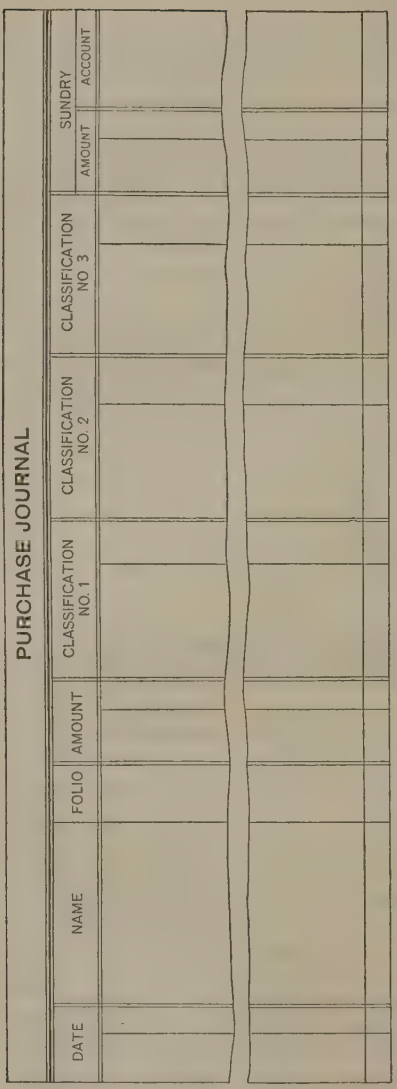


FIG. 7

as well as the indirect labor, supervision, etc. The totals here obtained should be entered in the ledger through the cash book, or by means of a journal entry to the debit of the departmental labor accounts and the indirect-expense account. In classifying this labor, the distribution must be made according to the way the labor was classified in the beginning inventory and in the estimated costs. Otherwise, misleading results will be obtained.

34. Plan of Verification.—The principles involved in this second method are identical with those of the first, although the method of verification and the results are more complete. It is possible to show in this instance not only that the material has been inaccurately estimated, but which kind of material; and the

PAY ROLL

NO.	NAME	AMOUNT	OPERATING DEPARTMENT NO. 1	OPERATING DEPARTMENT NO. 2	OPERATING DEPARTMENT NO. 3	INDIRECT LABOR	SUPERVISION	OFFICE SALARY

Fig. 8

same is true in the case of labor. Where labor amounts to a considerable sum, and large inaccuracies have occurred in any one department, a careful examination of estimates relating to articles manufactured in this department can be made, and the estimates revised for future use.

35. This method will be started in the same manner as the first method, by charging to each material and labor and indirect-expense account the amount shown in the beginning inventory in the columns provided for these different accounts. This will be the means of opening these accounts in the books to make the plan operative. After this has been done, the purchases should be entered and charged to these accounts from the purchase journal. The labor can be

charged to these accounts from the cash book or by making a journal entry, at the option of the bookkeeper.

At the end of the year, or whenever it is desired to verify the estimated costs, an inventory should be taken on the same form and in the same manner as the beginning inventory, so far as the classification is concerned. This inventory should be credited to these accounts, which will then show the costs of the various kinds of material used in the manufacture of the goods as sold, as well as the labor in the several departments and the indirect expenses incurred, all of which should be transferred to the sales account or the loss-and-gain account, and the books closed.

The amount so transferred, representing the cost of all the material and labor, as well as the amount of the indirect expenses, should now be compared with the results shown in the analysis of cost of sales, where all the costs appear as estimated according to the same classification. The difference between the two amounts will represent the inaccuracies in estimating costs, the inaccuracies for each classification being shown.

36. From this it can be seen that, since the accounts in the ledger have been charged with the beginning inventory relating to each account, and subsequently with all the purchases, labor, and expenses, and since they have been credited with the inventory at the end of the period, analyzed in the same way, the balance represents the cost of all the goods sold. The schedule showing an analysis of estimated costs, when compared with the calculated costs, will indicate wherein the estimated costs are at fault. The amount or extent by which the estimated costs are inaccurate will regulate the action to be taken in revising estimates.

37. Before entering the inventory in the ledger or closing the books, it should be determined whether the result of this verification of estimates is to be recorded in the general books. If it is to be recorded, the following is the proper plan of procedure: Credit the several material and labor accounts and the indirect-expense account with the amounts shown in the

analysis of cost of sales. Charge the total of all these estimated costs to the sales account or the loss-and-gain account, according to the manner in which the books are closed. Then take the difference between the balances shown in the material, labor, and indirect-expense accounts; compare these balances with the total of the inventory according to the same classification, and ascertain the exact amount of the difference. Enter this difference in the general books by means of a journal entry to the debit or credit of the sales or the loss-and-gain account, and credit or debit the several material and labor accounts and the indirect-expense account with the amount of the difference relating to each account. These accounts will then show the actual inventory of the material, labor, and expense account, and will correspond with the totals shown by the actual inventory. The sales or loss-and-gain account will then show the gross profit based on actual figures; whereas, before this entry was made, only the estimated gross profit appeared. The term *gross profit* as here used means the difference between the selling price and the actual cost price, including indirect factory expenses, but not including such expenses as selling and administrative expenses.

38. As was stated in the preceding method, a monthly loss-and-gain statement and balance sheet can be prepared from the general ledger, provided the entries relating to the analysis of cost of sales are prepared and entered in the records monthly instead of only at the end of the year. The same information will then appear in the ledger account relating to this particular part of the bookkeeping as if the entries were made annually, except that no adjustment of inventories and therefore no verification of estimated costs can be made. The accuracy of the profits shown will naturally depend on the accuracy of the estimates.

THIRD METHOD

39. A still further amplification of the primary cost system may be used. The principal feature of this method, which may be called the *third method*, is the comparing of estimated costs with the actual results on the classes of product manufactured. It is the most extensive and most complete method that can be used in a primary cost system without taking on the features of an actual cost system. The forms of inventory sheet, schedule of estimated costs, analysis of costs of sales, purchase journal, and pay roll, are similar in character to those described in connection with the second method. The following course is the one to pursue in using this form of estimated costs.

40. Inventory Record.—Use a separate sheet or several sheets, as the case may demand, for each department and extend the estimates of cost in the several material and labor columns and in the indirect-expense column. This furnishes an analysis of the total estimated cost of the articles and presents the information necessary to open the ledger accounts for this classification of product. It can thus be seen that for each department there will be several ledger accounts for material and labor and one for indirect expenses. The total shown by the inventory for each department should be charged to these accounts.

41. Attention is called to the method of treating raw material on hand not relating in any way to goods in process of manufacture or to the finished product. The amount of material in the storeroom or in the plant, upon which no labor has been expended, should be entered on a separate sheet in the ordinary way, and the total of this amount should be charged to an account in the ledger styled *Storeroom* or *raw material*. This account will be charged from month to month with all purchases relating to material not in the nature of supplies, and will be credited from month to month with the raw material drawn out, as reported by the material requisitions that are used in connection with this method.

42. Schedule of Estimated Costs.—The only difference between the purpose of the schedule of estimated costs for the third method and the purpose of the one in the second method lies in the use of the information furnished in pricing the inventory at the beginning and the end of the period, and in pricing the sales during this period. This difference, however, does not affect the form in any way. Any additional information affecting other forms will be explained when those forms are reviewed.

43. Analysis of Cost of Sales.—Although the analysis of cost of sales for the third method may be the same in design as that for the second method, its use is somewhat different. This difference consists in using separate sheets for each classification of product, showing all the articles sold between the two inventory periods and giving an analysis of the estimated cost as before. In the second system, the articles are entered without any regard for classification except as relating to particular departments. Of course, any classification must be identical with the beginning-inventory classification in order to verify the estimated cost of each class.

44. Purchase Journal.—The purchase journal for the third method may be used on the same general lines as that for the second method. However, only one column for material is necessary, as material requisitions are to be used for the purpose of classification. All materials and purchases can now be charged to one account, the distribution to the respective departments being made from the material requisitions. The total purchases of material for the month, exclusive of supplies in the nature of an expense, should be posted to the debit of the storeroom account, which account was charged with the inventory of raw material at the beginning of the period.

45. Material Requisition.—The material-requisition form, Fig. 9, was not necessary in the first and second methods, but it must be used in the third method to make the plan operative. As has already been shown, the total amount of raw material indicated by the inventory is charged to a storeroom

or a raw-material account in the ledger, to which account is also charged from month to month the total purchases of such material. Consequently, this account should receive credit each month for all material delivered to the operating departments chargeable to the several classes of product for which the material was used. These material requisitions should be priced according to the invoice or cost prices. After this has been done, the storeroom or the raw-material account will naturally show the value of the raw material on hand, based on inventory or purchase price. When these requisitions have been priced, a separate one being used for each classification

MATERIAL REQUISITION No.....

Department ..... Date ..... 19 ...

ORDER NO.	DESCRIPTION	QUANTITY	RATE	AMOUNT	

FIG. 9

or product to which the material is chargeable, a summary should be made each month showing the classification of product chargeable.

46. Summary of Material Requisitions.—As the name implies, a summary of material requisitions, Fig. 10, is merely to be used for the purpose of obtaining the cost of material used during the month, chargeable to the various classifications of product. Any other form, as to ruling, columns, etc., that will furnish the same information may be employed if preferred. The results obtained, however, should be entered in the journal, and each classification of product charged with the amount of material shown; the total amount of all material used should be credited to the storeroom or the raw-material account.

SUMMARY OF MATERIAL REQUISITION

CLASSIFICATION NO. 1		DEPT. A						DEPT. B						DEPT. C					
		NO. 2		NO. 3		NO. 1		NO. 2		NO. 3		NO. 1		NO. 2		NO. 3	
NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT	NO.	AMOUNT

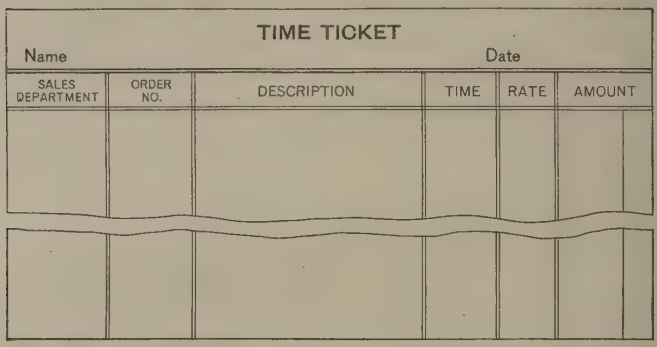
Fig. 10

47. Time Record.—Since the third method involves ascertaining the labor chargeable to each classification of product, according to operating departments, it will be necessary to use a time report similar to that shown in Fig. 11. A separate report should be made out by each employe of the plant whose time relates in any way to the product manufactured. This report should show the department in which the employe is engaged and the class or product to which his time is chargeable. The method of summarizing this information is explained in connection with the pay-roll form that follows.

48. Pay Roll. The pay-roll form for the third method is similar to that for the second method and is illustrated in Fig. 8. It shows in total the

amount of each employe's pay in each operating department chargeable to each classification of product, as well as the amount of indirect labor. A separate sheet should be used for each operating department, and the columns from left to right should be headed with as many classifications of the product as are to be kept, instead of the number of the departments as in the illustration. The total of this pay roll as analyzed may be entered in the cash book, showing the labor chargeable to each classification of product according to operating departments, as well as the indirect labor, etc., and can subsequently be posted in the ledger to the debit of these accounts.

If desired, only the total may be entered in the cash book, which can be posted to the debit of a pay-roll account. The


TIME TICKET

Name Date

SALES DEPARTMENT	ORDER NO.	DESCRIPTION	TIME	RATE	AMOUNT

FIG. 11

pay-roll account can then be credited, through a journal entry at the end of the month, and the proper accounts for the classifications of product, as well as for indirect labor, can be charged. This last method will prove more satisfactory than the first, as the entry distributing these charges may be made monthly instead of weekly.

49. Plan of Verification.—The object of the third method, as before explained, is to verify the estimated costs relating to each classification of product according to certain general subdivisions of material, labor, and indirect expense.

It has also been shown that separate accounts must be opened in the ledger with each classification of product for various materials relating to the product, for each operating department labor charge, and for the indirect-expense charge. A separate account must also be opened for the storeroom or the raw-material account. The inventory must be transferred or entered to the debit of these several accounts. After this has been done, the subsequent purchases of raw material, exclusive of supplies, should be charged from the purchase journal to the raw-material account, as previously explained. The labor chargeable to these various classifications of product according to operating departments, may be entered in the ledger weekly or monthly through the cash book or the journal, as is explained in describing the pay roll.

50. It will now be seen that all direct charges, such as material and labor, have been entered to the debit of the classification of product to which they relate, and it will be observed that an account appears in the ledger styled *indirect expenses*, not relating to any of these classifications of product, but which should be charged or prorated among them. This can be done by dividing the total amount of indirect expenses by the total labor charged to all the classifications of product. The rate or the per cent. thus ascertained should be multiplied by the amount of labor charged to each classification of product, and the result distributed or charged through a journal entry to each of these products as indirect expenses, the total amount being entered to the credit of the indirect-expense account proper, which account should then balance.

51. All classifications of product are now charged with all expenditures relating to the cost of production. The next question to consider is the means of crediting these various classifications of product with the amount of goods sold at estimated cost, the estimated cost being analyzed in the same way in which the expenditures or charges are analyzed. This information is contained in the analysis of cost of sales. Therefore, if the totals shown in the analysis of cost of sales for each classification of product are credited in the ledger to the

corresponding account, these accounts will show the value of the inventory based on the estimates. This result should agree at the end of the year, or when an inventory is taken, with the actual inventory, provided the ending inventory has been taken in the same way and at the same prices that the cost of sales were priced.

The difference between the actual inventory and the theoretical inventory, shown in the books, will represent the inaccuracy in estimating costs, not only in the class of product, but also in the various accounts of material, labor, and indirect expense. This information will show which class of product has been inaccurately estimated and where these inaccuracies are most prominent; it will also show in what department the labor or material was inaccurately estimated, and to what extent calculations and distribution of indirect expenses have affected the errors in estimating costs.

52. Statement of Profit and Loss.—The object of presenting the statement of profit and loss, Fig. 12, is to illustrate more clearly the results of operating this plan. First, however, it may be well to explain more fully the closing entries just described from a bookkeeping standpoint. At the end of the month, when the total sales at the selling price have been ascertained according to the respective classifications of product, the total sales for each classification should be credited to the sales account for that classification or product, this account being independent of the accounts already opened for the same product. The accounts previously opened relate to expenditures and cost and show the inventory, but have no connection whatever with the sales at the selling price. The purpose of opening a separate account for each classification or product sold can now be understood. These accounts should be charged with the total cost for each classification or product, as shown by the analysis of cost of sales, and this entry represents the debit for the corresponding credit that has been posted to the various accounts. The sales accounts for each classification are credited with the sales at the selling price and are charged with the sales at the estimated cost price, and the difference

STATEMENT OF PROFIT AND LOSS — For the *month* — ending *Jan. 31-* — 1909.

DEPARTMENTS	SALES		GROSS PROFIT		EXPENSES						NET PROFIT	
	Amount	Cost	Amount	%	Selling	%	Administrative	%	Total	%	Amount	%
A	18 833 90	9 334 08	9 499 82	102.0	3 654 10	39.1	1 508 06	16.2	5 162 16	55.3	4 337 66	46.7
B	1 796 86	1 084 30	712 56	66.5	424 42		176 18		599 60		112 96	10.2
C	3 463 94	1 586 62	1 877 32	118.3	621 04		256 54		877 58		999 74	63.0
D	1 712 10	952 04	760 06	79.8	372 64		153 94		526 58		233 48	24.5
E	1 698 06	1 102 60	595 46	54.0	431 40		178 08		609 48		14 02	1.3-
F	883 38	419 72	463 66	110.5	164 28		67 84		232 12		231 54	26.2
G	3 791 90	2 324 44	1 467 46	63.1	909 04		376 32		1 285 46		182	7.8
H	1 247 98	568 04	679 94	119.7	222 34		91 86		314 20		365 74	64.4
I	6 538 92	3 164 18	3 384 74	107.3	1 234 62		509 80		1 744 42		1 640 32	52.0
J	2 745 24	1 585 62	1 159 62	73.1	624 44		256 08		880 52		279 10	17.8
K	842 86	489 68	373 20	79.5	183 84		75 84		259 68		113 52	24.2
L	544 76	270 68	274 08	101.3	106 04		43 72		149 66		124 42	46.0
M	16 070 42	8 106 44	7 963 98	98.2	3 172 88		1 309 08		4 481 96		3 482 02	42.9
N	844 38	561 44	282 94	50.4	219 76		90 74		310 50		27 56	4.9-
O	5 786 60	3 951 02	1 835 78	46.5	1 546 34		638 14		2 184 48		348 70	8.8-
P	673 86	319 16	354 20	111.0	124 92		51 68		176 60		177 60	55.7
From Operating												
All other Income and Expenses												
From all Sources	67 474 88	36 790 06	31 684 82	88 5	14 012 60		5 782 40		19 795		11 889 82	33.2

Approved: ..... Correct .....

FIG. 12

or balance as a consequence represents the estimated gross profit.

53. In preparing the profit-and-loss statement it will be necessary to refer to the ledger account, and enter the sales and the estimated cost of the sales that already appear in the account in the columns provided for that purpose. The difference between the two amounts is extended in the column headed gross profit, opposite the department to which it relates. The next step is to ascertain, by referring to the accounts styled selling expenses and administrative expenses, the total of these accounts, and enter these amounts in the proper columns. The per cent. that the selling expenses bear to the estimated cost of goods sold should be ascertained, and the estimated cost in each department multiplied by this per cent. The same procedure should be followed in the case of administrative expenses. In this way, the selling expenses and the administrative expenses are distributed among the several departments. These two amounts, that is, the selling expenses and the administrative expenses, should then be added and the sum entered in the total column, opposite the proper department. These amounts will then represent the total expenses chargeable to each department. By deducting these expenses from the estimated gross profit appearing opposite each department, the net profit is obtained, and this is entered in the column headed Net Profit. The total of this column, showing the estimated net profit of each department, will indicate the total estimated net profits of the business, the accuracy of which will depend entirely and absolutely on the accuracy of the estimated costs.

After the selling and administrative expenses chargeable to each classification of product have been ascertained, these accounts, that is, the selling and administrative expense accounts, should be credited with the total amount, and the various classifications of product charged with the proper amount. These classification accounts will then show the estimated net profit on the various classifications of product sold, which amount should then be transferred to the general profit-and-loss account in the usual manner.

COMPARATIVE BALANCE SHEET.

January, 31, 1909.

ASSETS	CURRENT MONTH		Increase or Decrease		LIABILITIES	CURRENT MONTH		Increase or Decrease	
Accounts	Amount	Amount	Amount	Amount	Accounts	Amount	Amount	Amount	Amount
CURRENT ASSETS					CAPITAL STOCK		250 000 —		
Cash		6 008 43		1 010 76					
Notes Receivable		2 145 —		— 100 —					
Accounts Receivable		86 749 21		—5 020 19					
Raw Material		36 457 24		10 263 66					
Material-Finished & In Process		49 662 30		4 042 62					
DEFERRED CHARGES					CURRENT LIABILITIES:				
Selling Expense		2 741 92		192 67	Notes Payable		37 500 —		—2 500 —
Administrative Expense		941 75		74 21	Vouchers Payable		42 408 70		1 734 58
					Pay Roll		4 721 95		642 81
PROPERTY					RESERVE FUNDS:				
Real Estate		60 000 —			For Discounts		4 287 46		— 266 01
Buildings		120 475 90			For Doubtful Accounts		500 —		
Machinery & Tools		175 418 07		1 676 29	For Depreciation		2 100 —		300 —
Factory Furniture & Fixtures		8 020 94		245 76	For Taxes		572 91		572 91
Office Furniture & Fixtures		5 118 90		100 —	For Interest		1 549 25		245 65
PATENTS, PATTERNS & DRAWINGS:									
Patents		7 500 —			MORTGAGE		100 000 —		
Patterns		12 645 —		145 —					
					SURPLUS		116 934 57		
					NET PROFIT for the current fiscal year to date		11 889 82		11 889 82
Total Assets		572 764 66		12 629 76	Total Liabilities		572 764 66		12 629 76

FIG. 13

54. Balance Sheet.—The style of balance sheet employed in this method is shown in Fig. 13. Persons familiar with bookkeeping will readily understand this statement, which represents a trial balance after the books have been closed. From a bookkeeping standpoint, it does not differ from any other balance sheet; but, from a business standpoint, it differs to the extent that the accuracy of the inventory shown is based on the accuracy of the estimates of cost used in crediting the several classifications of product. As this plan provides for preparing this statement monthly, based on these estimated inventories, attention is called to the fact that when the actual inventory is taken the difference between the estimated and actual figures should be credited to these accounts and charged to the sales account for the same classification. This means that, if the theoretical inventory or the balance as shown in the books exceeds the actual inventory, the inventory accounts must be credited and the sales accounts charged; and where the actual inventory exceeds the balance shown in the ledger account, these entries should be reversed.

COST ACCOUNTING
(PART 7)

DEPARTMENTAL COST SYSTEM

COSTS AND PROFITS AT INVENTORY PERIODS

1. As the function of a departmental cost system and its relation to the primary and complete systems were made plain

Return to Office immediately upon completion.

FACTORY ORDER No.....

To Foreman..... Department Date.....

	DATE WANTED		DESCRIPTION	QUANTITY	

You are hereby authorized to manufacture the above articles, as stated, material to be drawn from Store Room, as per Bill of Material No.....

Completed..... 19.....

(Manager)

.....
(Foreman)

FIG. 1

in *Cost Accounting*, Part 6, under the heading General Introduction to Systems, it only remains to explain the procedure and the forms employed.

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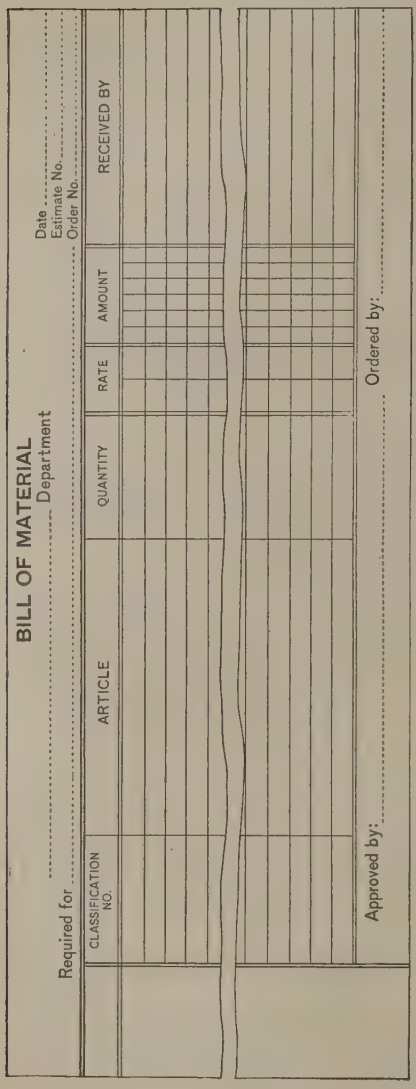


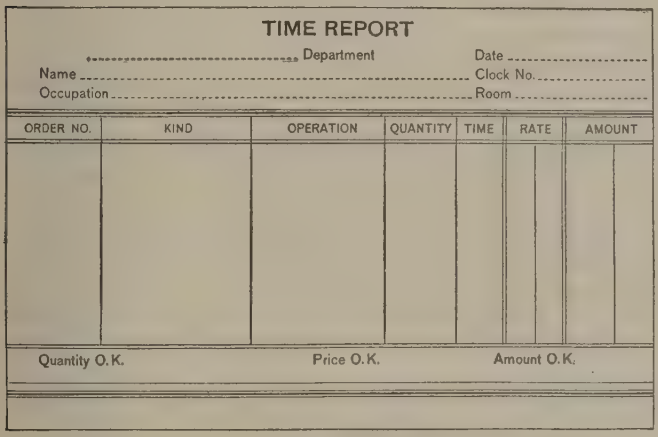
FIG. 2

2. Production Order.—The purpose of the production order, Fig. 1, is to substitute written instructions for verbal direction in the manufacture of all products in the several operating departments, and to enable the management to direct and regulate the production of any class of product called for by orders from customers. The proper use of the form will enable the management to keep in touch with all that is going on in the several departments and to supervise the labor forces and the heads of the several departments in such a way as to materially increase the efficiency of the plant.

The form in itself is simple and can be readily understood, and its practical operation and intelligent use will effect a

greater saving than may seem apparent on the surface. The number of the production order should appear on all the time reports, not for the purpose of cost finding, but to prevent an employe from filling in time and piece-work reports on goods not actually in process of manufacture.

3. Bill of Material.—The purpose of the bill of material, Fig. 2, is to prepare estimates showing all the material used in the manufacture of either a special order, which means a class of product that may or may not be manufactured in the future, as well as for standard goods that will be constantly carried in



TIME REPORT

Department ..... Date .....

Name ..... Clock No. .....

Occupation ..... Room .....

ORDER NO.	KIND	OPERATION	QUANTITY	TIME	RATE	AMOUNT

Quantity O.K. Price O.K. Amount O.K.

FIG. 3

stock. In the latter case, a bill of material should be made up and priced for every article that is carried in stock, and this price, or cost, should be revised from time to time as the cost of raw material increases or decreases in market value. Otherwise, inaccuracies would necessarily occur in transferring material used from the raw-material account to the departmental account, as will be seen later.

Another purpose of this form is to record the calculations of the amount of material used for each month that is chargeable to the several departmental accounts. The total of the

bill of material is credited to the raw-material or the storeroom account, which should be charged with the inventory at the beginning of the period and with all purchases made since that time. This form relates directly to the production report, which is explained later.

4. Time Reports.—The time report shown in Fig. 3 is one that may be used in a departmental cost system, and can be used for either day or piece work in the same department.

Every employe in a plant should make out a time report daily, showing the number of the production order, the nature of the work engaged on, the time consumed, and, if practicable, the number of articles produced. The foreman of the department should make it his business to examine these reports daily and turn them into the office at night or the following morning, with his name signed to each form. The management should ascertain whether or not these reports are really examined or merely signed, as the results at the end of the year bear a close relation to the forms here shown, simple as they may seem in design. In the case of piece work, a careful examination should always be made as to quantity, quality, and price.

It is an easy matter, particularly where a complete cost system is not in use and where stock records are not kept, to falsify piece-work reports without the knowledge of the management or the foreman.

The results shown by these time reports should be transferred daily to the analysis of pay roll.

5. Analysis of Pay Roll.—All of the data called for by the analysis of pay roll, Fig. 4, should be obtained from the time and piece-work reports. The columns running from right to left may be explained as follows:

In the column headed Name should be entered the name of each employe; and the clock number, if one is in use, should be entered in the next column. At the end of each day, the time reports should be entered opposite the name of each employe in the column for that day, and if the results are based on piece work the quantity should also be entered, but on a separate sheet and the heading Quantity inserted instead of

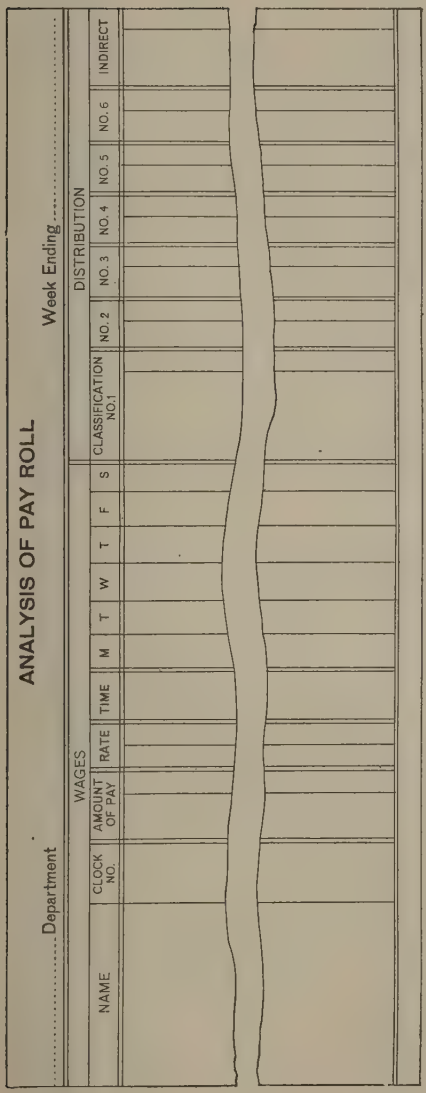


FIG. 4

Time as on the form. The total for the week should be entered under the heading Time for day workers, and for piece workers under the heading Quantity and the rate per hour or per article also should be entered in the column provided for that purpose. The result, that is, the rate multiplied by the time or the quantity, should be entered in the column headed Amount of Pay, opposite the employe's name.

Under the heading Distribution should be entered the amount of each employe's wages chargeable to the particular classification or kind of goods on which he was engaged. Any time not chargeable to any particular class of goods should be entered in the column

headed Indirect. The total of this distribution, that is, labor chargeable to the various kinds of goods manufactured and the indirect labor added together, should equal the amount of the employes' wages for the week.

6. When the pay-roll check is drawn and entered in the cash book for the weekly pay roll, the amount should be charged in the ledger directly to the pay-roll account; and at the end of the week or the month a journal entry should be made crediting the pay-roll account and charging the various kinds of products appearing in this analysis of pay roll, as well as the indirect-labor account. This entry will balance the pay-roll account, and charge or distribute the amount of the wages to the proper accounts or departments for the period in question.

7. Production Report.—Several methods are employed in reporting the production of finished parts departmentally, as well as finished products, and various forms, of which Fig. 5 is one, are used.

In this instance it is intended to report only the production of finished product, that is, goods ready for market, ignoring entirely anything relating to finished parts that are used in assembling or manufacturing the finished article. The form should be ruled precisely as shown in the illustration, except that the name or the number of the article, according to the classification, should be printed on one or several forms, according to department. In case several departments operate independently, that is, each to produce a finished product, a separate form should be used for each department, with all the articles appearing. If the entire product passes through all the departments and is delivered to a stock room or a stock clerk, one form will be sufficient.

The foreman of the department or the superintendent may keep this record, which should be in loose-leaf form and be executed in duplicate. The information can be obtained from either the production orders or from the time and piece-work reports. Columns are provided for the daily production, and the entries should be made each day under the proper date opposite the article produced. The total should then be

PRODUCTION REPORT

Department ..... For Month of ..... 19 .....

ARTICLE	PRODUCTION																											MATERIAL COST				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	TOTAL	BILL OF MATERIAL NO.	RATE	AMOUNT	CLASSIFICATION TOTAL
CLASSIFICATION																																
" NO. 1																																
" NO. 2																																
" NO. 3																																
" ETC.																																

Correct: ..... Approved: .....

FIG. 5

extended for the month in the column provided for that purpose. After all the figures have been verified, the original should be sent to the main office.

8. On receipt of this form properly filled out, the bookkeeper or the cost clerk should fill in the columns under the heading Material Costs. All the information called for can be obtained from the bill of material. The number of this bill of material and the cost, or rate, per article, that is, for the article shown on the left of the form, should be entered, as should also the product of this rate multiplied by the total number, or quantity, of this article manufactured during the month. A number of articles may be entered under each classification of manufactured products, which is the basis of the departmental cost system. After all these articles have been priced, and the amount extended according to classification, the total should be entered in the column headed Classification Total.

9. The total amount for all classifications, representing the total amount of material used for the month, should be credited through a journal entry to the storeroom or the raw-material account and charged to the various kinds of product shown in the column headed Classification Total. The effect of this entry is to credit the storeroom or the raw-material account with goods taken out and used in the manufacture of product actually finished and ready for shipment, and at the same time to charge the department or class of goods with the cost of this material.

10. Register of Accounts Payable.—Although the register of accounts payable, Fig. 6, does not relate directly to a cost system in the true sense of the word, yet an examination of the design will show its usefulness in obtaining the results called for by the departmental cost system. The usual title for such a record is *purchase journal*, but this name is not used in this instance because the book is employed for other purposes; that is, it admits of a more extensive classification of accounts and also makes it unnecessary to keep an account with each individual from whom goods are purchased.

REGISTER OF ACCOUNTS PAYABLE

For the month of ... 19 ..

CREDITS										DEBITS									
DATE	VOUCHER NO	PAYOR OF	LEDGER FOLIO	OPEN ACCOUNTS	ACCOUNTS PAYABLE	DATE PAID	CHECK NO	ACCOUNTS		LEDGER FOLIO	MISCELLANEOUS	RAW MATERIAL	FACTORY SUPPLIES	LIGHT HEAT & POWER	FREIGHT EXPRESS & CARTAGE (INWARD)	FREIGHT, EXPRESS & CARTAGE (OUTWARD)	PRINTING & STATIONERY OFFICE	PRINTING & STATIONERY FACTORY	

FIG. 6

All the columns on the left-hand side of the book, under the general heading Credits, relate to the terms of the purchase; also, they show from whom goods were bought and when and how the account was paid. The column headed Open Accounts is used for recording transactions with creditors with whom it is desired to keep an open account in the ledger.

The column headed Accounts Payable is intended for all accounts that do not have to be kept separately in the ledger. The total of this column should be posted in one amount at the end of the month to the credit of vouchers payable, and as these accounts are paid the date of payment, together with the check number, should be entered in this register opposite the proper account in the columns provided for that purpose.

The items entered in the columns headed Open Accounts should be posted separately from day to day to the credit of the proper individuals or company in a regular ledger. If it is desired to keep a private or a general ledger, and to have this ledger self-balancing, a controlling account should be opened and styled *creditors' ledger*, in which case the total of the column headed Open Accounts should be posted to the credit of this account.

11. All the columns on the right-hand side of the book, under the general heading Debits, relate to the distribution or classification of purchases. It is not the intention here to classify, or head, these columns in a complete manner, but only to suggest the proper method of designing a record along these lines. A classification of accounts according to various requirements is shown in *Cost Accounting*, Part 5, and from this it should not be difficult to select a classification of accounts applying to any line of manufacture.

It is sufficient to state that the total of these several columns should be posted at the end of the month to the debit of whatever account appears at the head of a column. In regard to the miscellaneous column, each item should be posted separately. The miscellaneous column is intended for accounts that are not sufficiently active to require a special column, the value of the special columns being principally to save posting and writing the name of the account.

REGISTER OF SALES

For the Month of ..... 19...

DESCRIPTION								CLASSIFICATION					
DATE	SALES SHEET No.	SOLD TO	ADDRESS	TERMS	SALESMAN	LEDGER FOLIO	AMOUNT	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6

FIG. 7

The footings of the two columns on the left-hand side of the book added together should equal the sum of the footings of all the columns on the right-hand side of the book, which means that the debits and the credits should be equal.

12. Register of Sales.—The register of sales, Fig. 7, is presented here to illustrate the method of classifying the sales according to the manufactured product. The required information for this form can be obtained from the sales sheet, and if the postings to the sales ledger are made from the bill only the total of the bill and the classification of the sales need be entered.

At the end of the month, the total amount of the sales for each department or classification of product should be credited to the proper account shown at the head of the several columns, and the total of all goods sold in all departments should be charged to the customers' ledger controlling account, provided one is kept; if none is kept, the individual postings to the customer's account is all that is necessary.

13. Departmental Accounts.—The method of obtaining all the information required to operate a departmental cost system is now explained up to the point of entering the amounts chargeable to the several departments in the general ledger. The name of these accounts and the number required must be determined by the person who installs the system. All the data relating to the departmental accounts, as well as all other accounts, can be obtained by referring to the classification of accounts.

It may be well to repeat here that the terms classification, kind of product, or department are used to express a classification of the various articles manufactured, and do not relate directly or indirectly to any operating department in the factory. The object is to show the profit, as well as the amount of sales, in these various branches of the business. For the information of persons not familiar with accounting, it might be well to state that it is not possible to show profits on an operating department unless the department is an independent factor in itself.

14. The results called for in these various accounts are obtained from the following sources: The labor chargeable to each department is obtained from the analysis of the pay roll, which is entered in the ledger by means of a journal entry and credited to the pay-roll account. The cost of material chargeable to these departments comes from the production report, which is also entered in the journal and credited to the raw-material account at the end of each month. At the end of the year, or at any inventory period when the books are closed, the indirect expenses may be charged to the several departments on the basis of the amount of labor charged to each department; that is, divide the expenses by the labor and ascertain the rate, and multiply the amount of labor charged to each department by this rate, and the result will show the amount of expense properly chargeable to that particular department. All the amounts charged to these departments should be credited to the account termed *indirect factory expenses*, which account will then balance, provided the distribution of the expense is accurate.

15. The sales for each department should be posted at the end of the month from the register of sales to the credit of the proper department. The difference between the inventory at the beginning of the period and at the end of the period, as shown in the inventory account, should be charged or credited to the proper department account; that is, if the beginning inventory exceeds the ending inventory, the difference should be charged to the department to which the inventory relates. If the reverse is the case, the amount should be credited to the department account and charged to the inventory account. The difference between the two sides of the account for the department will now show either the gross loss or the gross profit.

16. The total amount of the selling and administrative expenses should next be prorated, at cost price, over the several departments on the basis of the volume of business done in all departments. The total amount charged as selling expenses to the several departments should be credited to the

account called *selling expenses*, which should then balance. The same entry should be made for administrative expenses, which will then also balance.

The difference between the two sides of the departmental accounts will now show the net profit or loss of each department, which profit or loss should be transferred to the regular profit-and-loss account, the total of which will represent the net profit or loss of the business.

17. Raw-Material Account.—All the charges to the raw-material account should be obtained from the register of accounts payable or from some similar record. The credits to this account should be taken from the production report and the amounts entered each month. At the end of the year, this account should be credited with the value of the material in the process of manufacture, exclusive of labor.

This account is closed by taking the difference between the two sides of the account, which is the theoretical inventory. and either increasing it or decreasing it to the amount of the actual inventory, the difference being charged or credited to indirect expenses.

18. Inventories.—The most approved method of treating inventory accounts in the ledger consists in charging the beginning inventory to an inventory account, separate and distinct from the regular merchandise or department account. When the next inventory is taken, the beginning inventory should merely be increased or decreased to correspond with the actual inventory taken at the end of the period, charging or crediting the difference to the merchandise account, or, in this case, to the several department accounts.

SPECIAL-ORDER SYSTEM

PRODUCTIVE-LABOR METHOD

19. The term *special order* means an order that relates to goods chargeable to a particular customer or to a particular production order for goods to be carried in stock. To obtain the cost according to this system, it will be necessary to issue a separate production order for each classification of articles that are to be manufactured, provided the costs are charged against the order number. Should a production order that covers a number of different articles be issued, then subproduction orders must be issued for each class of articles, these subproduction orders bearing the regular production order number and also being so designed that each separate subproduction order may be charged with costs without any complications.

20. No matter what system may be devised, the principle involved in the use of a production order should always be carried out, as it tends to bring about a condition of systematic organization in regulation, production, etc. In presenting the four complete cost systems, no attempt is made to include in them all the organization forms, some of which are essential to an organization in which the intention is to conduct it on a systematic basis. It is thought best to confine these systems, as far as possible, to actual cost finding. The methods presented are intended to illustrate as far as possible the methods of intelligently and accurately compiling the cost data and interlocking it with the general books.

In general, the intention is to outline the methods by which the factory is charged with all expenditures relating to the cost of production, such as the inventory at the beginning of the period, purchases, labor, and all expenses incurred in the operation of the plant, not including selling or administrative

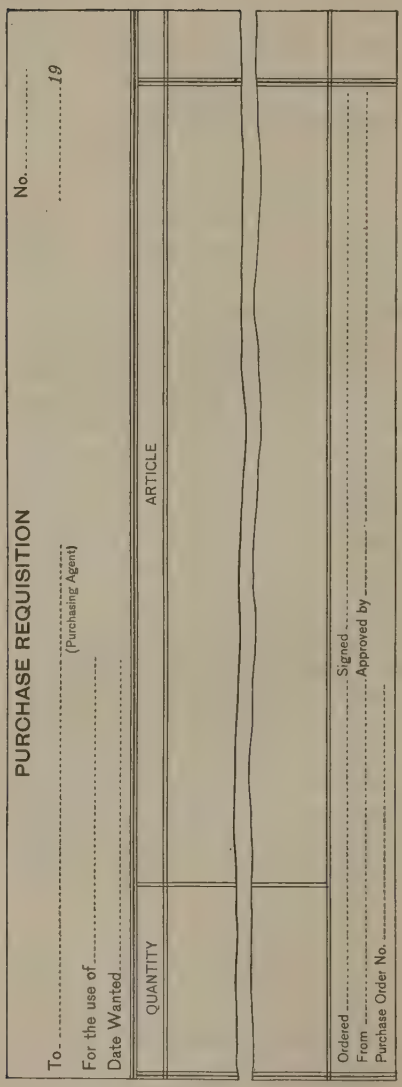


Fig. 8

expenses. All these costs or expenses are charged to the factory, and the factory is credited at the end of the month with the total amount of goods actually sold during the month at the cost price, the balance of the factory account representing the value of material, raw, in process, and finished.

21. Purchase Requisition.—The purchase requisition, Fig. 8, is an organization form, because no data or figures are used from this record to compile any cost data. Its purpose is to substitute written requests for verbal statements, and it is presented with a belief that it should constitute a part of any well-organized plant in order to prevent misunderstandings in connection with the buying of raw material, supplies, etc.

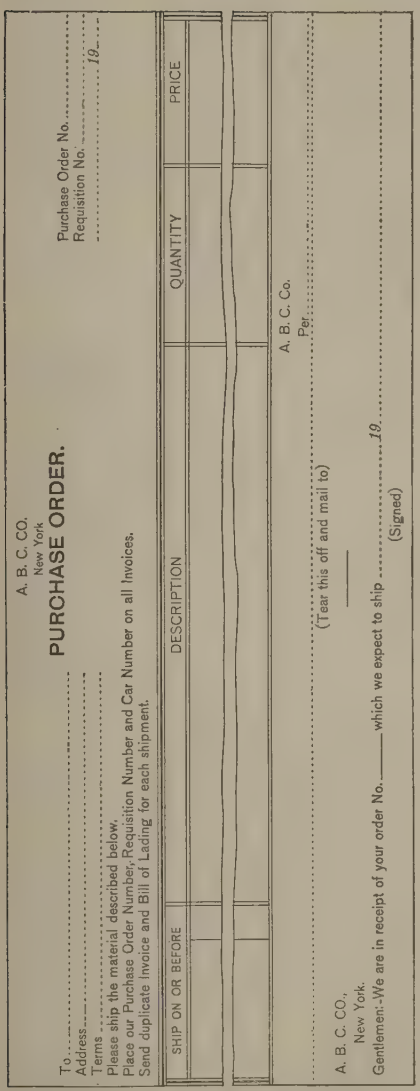


FIG. 9

The person who makes out this form will differ in various plants; that is to say, the stock clerk, the foreman of the operating department, the cost clerk, or the superintendent may be the best party to make the requisition, depending on conditions. The form, when made out, is delivered to the purchasing agent or the person who has in charge the ordering of material and supplies.

The next step would be the ordering of the material, and this leads up to the purchase order.

22. Purchase Order.—The relation of the purchase requisition to the purchase order, Fig. 9, will depend on the nature of the business. In a special-order system, in which all the costs are charged to

the order number from the material requisitions or bills of material, a form like that illustrated will be found suitable. However, in certain classes of business where the special-order system is used it is practical and more simple to charge a purchase directly against an order or an article. In such a case, it would be necessary to add another column under the heading Charge To.

The purchase-order form may be made out in duplicate or in triplicate, leaving blank the quantity column in one of the

REPORT OF MATERIAL RECEIVED

Purchase Order No. ..... No. .....

Name .....

DESCRIPTION	QUANTITY

Charges Department Account

Received by ..... Entered by .....

FIG. 10

copies, which copy should be sent to the receiving clerk. In fact, there are many uses to which copies of a purchase order may be put, depending on the nature of the business.

23. Report of Material Received.—In Fig. 10 is shown the original and in Fig. 11 the duplicate of a report of material received. By means of this form it is possible to obtain from the receiving clerk an independent report of the goods actually received. Not only does this form act as a check on the invoice, but it provides the information required to make the proper entries on the stock records.

The report of material received should be executed in duplicate, and both copies should be sent to the office, the original

REPORT OF MATERIAL RECEIVED

Purchase Order No._____ No. _____

Name _____

DESCRIPTION	QUANTITY	PURCHASE PRICE	RATE	AMOUNT

Charges Department Account

Received by_____ Entered by_____

FIG. 11

to the purchasing agent and the duplicate to the stock clerk. The original supplies the purchasing agent with information that can be used advantageously in following purchases upon which partial shipments have been made.

In the lower section of the duplicate is shown the charge relating to transportation, and this, when entered, should be distributed over the purchase price, or first cost, and the result entered in the column headed Rate, which means the final cost, including transportation. The quantity of each article multiplied by the rate will show

the amount to be entered in the column headed Amount. The items appearing in this record should then be posted, both as to quantity and value, to the stock record for raw material in the column headed Received.

24. Whether or not it is advisable to enter the freight, or transportation, charges on this record and include them in the purchase price of the material will depend on the nature of the raw material purchased. As the distribution of these charges over the purchase price at times necessitates considerable detail, the question to consider is the relation that the charges bear to the article in question; and the proposition would be whether to make this charge directly against the purchase price or to include this charge in the indirect or overhead expense.

In any case, where the charges referred to amount to such a figure as to affect materially the price of the raw material charged against an article, adding these charges to the purchase price would undoubtedly be the best plan; and where the charges are not of such importance, it would be just as well to include them in the overhead charges, as the difference in the two methods would not be of sufficient importance, considering the time required to make the detailed distributions.

25. Raw-Material Stock Record.—In Fig. 12 is shown a raw-material stock record so general in design that it is suitable for nearly any class of business. That part of the form under the heading Balance may be left out if desired, and the balance shown at only the end of each month. It may be shown in pencil on the form, the same as a balance in a ledger account, or it may be brought down in ink, the same as any regular account would be handled. The information called for under the heading Received would be obtained from the report of material received; that called for under the heading Delivered relates to the material that has been used in the manufacturing department, and would come from the material requisition, which is described later.

A separate card or sheet should be made out for each article, on the same plan or principle that a separate account is kept

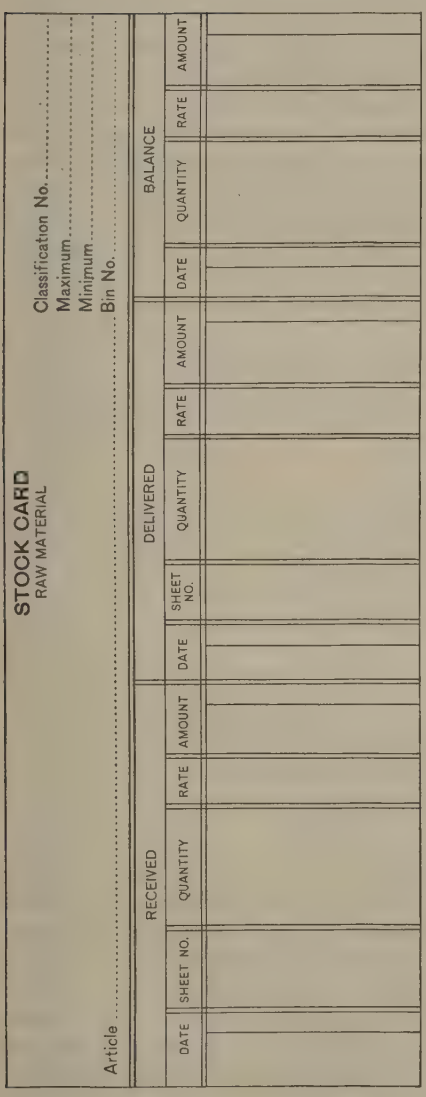


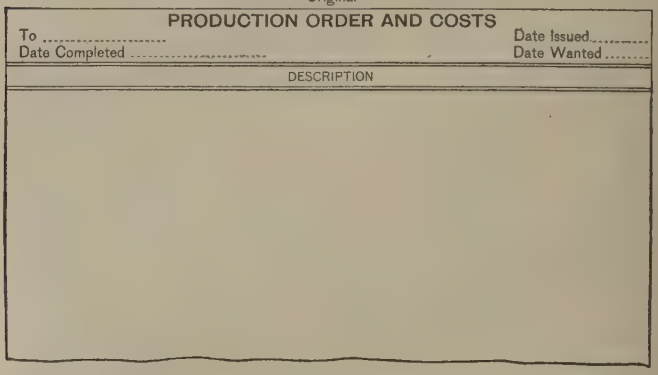
Fig. 12

with an individual or a company, and the article should be charged with the amount received and credited with the amount delivered.

In the upper right-hand section of the stock card appear the words Maximum and Minimum, which relate to the quantity of the article desired to be carried in stock; the bin number, which refers to the location of the stock; and the classification number, which is intended for classifications of articles that bear the same name, but differ in sizes, weights, etc.

26. Inasmuch as this special-order system provides for a perpetual inventory and is calculated to establish a check, or safeguard, on the stock, it is

desirable to make a practice of verifying the book inventory from time to time by taking off a list of certain articles each day or week and having the person in charge of the stock take an actual inventory of the material shown on the list for comparison with this stock record. If discrepancies exist, the stock record should be adjusted to correspond with the actual inventory on the date at which it was taken, provided, of course, that the discrepancies are small and apparently due to natural causes; otherwise, an investigation should be made and the reason ascertained. By following this plan, a more accurate inventory will appear in the records daily than can be taken at


Original

PRODUCTION ORDER AND COSTS

To ..... Date Issued.....

Date Completed ..... Date Wanted .....

DESCRIPTION

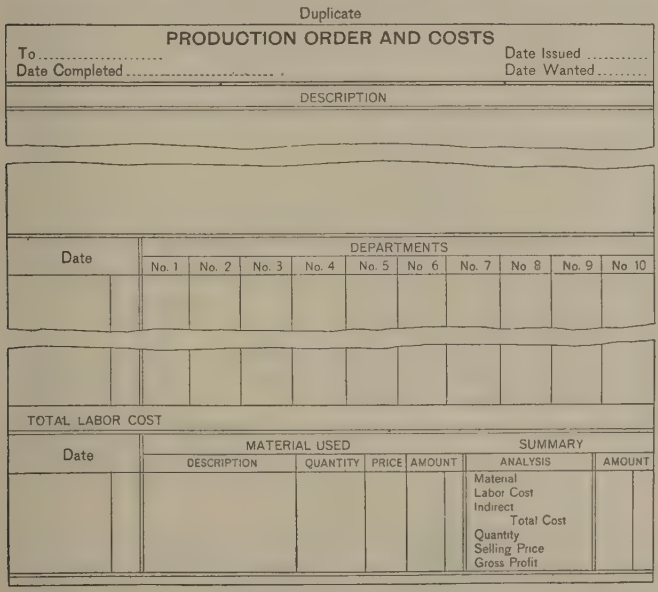
FIG. 13

the end of the year, when everything is inventoried at one time; and, furthermore, the general effect will be productive of good results, otherwise unobtainable.

27. Production Order.—In a special-order system, the production order may be a simple form, and the costs collected on a cost record or register; but there are classes of business in which it is just as convenient to compile the cost data on the production order, and for that reason this method is illustrated in this system. The form, as shown in Figs. 13 and 14, is made in duplicate, the original, or short copy, Fig. 13, being delivered to the factory and the duplicate, Fig. 14, provided with columns

for the cost records of the production, remaining in the office. All the information under the heading Material Used is obtained from the material requisition and posted directly to this order in the columns provided for that purpose. The labor cost is taken from the time reports, and entered according to the operating departments. This particular form shows ten operating departments.

In the lower right-hand corner of the form would be entered the material cost, the labor cost, the indirect cost, the total


Duplicate

PRODUCTION ORDER AND COSTS

To ..... Date Issued .....

Date Completed ..... Date Wanted .....

DESCRIPTION

Date	DEPARTMENTS									
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10

TOTAL LABOR COST

Date	MATERIAL USED				SUMMARY	
	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ANALYSIS	AMOUNT
					Material	
					Labor Cost	
					Indirect	
					Total Cost	
					Quantity	
					Selling Price	
					Gross Profit	

Fig. 14

cost, the quantity, the selling price, and the gross profit. The method of arriving at the indirect expenses to be added to each order has been explained elsewhere.

For further explanation, the total indirect expenses just referred to is divided by the direct labor or the labor actually charged to orders, and the percentage that is obtained will necessarily represent the amount chargeable to each order.

In other words, by multiplying the amount of labor charged to each order by the rate of indirect expenses, the result will be the amount of the overhead or indirect-expense charge for each order; and if the calculations are correctly made, the total of these indirect expense charges will equal the entire amount of indirect expenses shown in the books.

28. Material Requisition.—The material requisition, Fig. 15, is usually made out by the foreman of the department requiring the materials or supplies specified. In some cases, however, where the class or the quantity of material is known

Charge
Article.....
Order No.....
Machine No.....
Process.....

MATERIAL REQUISITION

No.....
Date.....

DESCRIPTION				COST			
ARTICLE	SIZE	WEIGHT	COUNT	RATE		AMOUNT	

Received by:..... Approved by:.....

FIG. 15

and stated on the production order, the stock clerk receives a copy of the production order, which is used as his requisition for the delivery of the material. The requisition, in any event, represents an order on the stock clerk to deliver the articles called for.

After the material has been delivered, the form should be sent to the office, where the cost of the material is entered on the credit side of the stock record, this credit on the stock records meaning a corresponding debit to the production order and cost sheet.

29. Time Report.—The style of time report used in this special-order system is illustrated in Fig. 16, being the same as the one previously described in the collection of time reports.

In this system, the time should be stamped on a card of the employe, and the order or job number should be entered, as should also the machine number and workman's number. The operation upon which the workman is engaged should be checked, and all the operations should, of course, be printed on the form when it is originally designed according to the nature of the business. The time employed should also be stamped when the job is finished, so as to give an accurate account of the time consumed on the order. The employe's

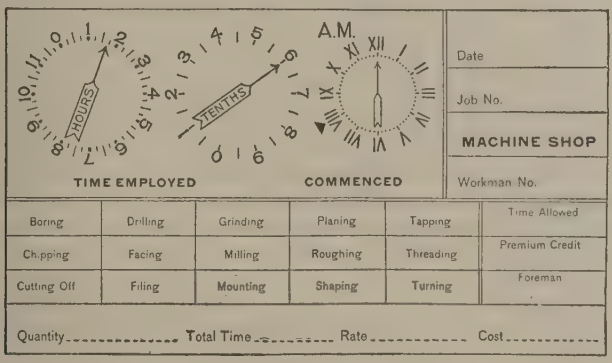


FIG. 16

rate should then be entered and the cost extended. This should be charged to the same order number as is shown on the time report, and entered on the production order and cost sheet under the heading Labor. If the time is not chargeable to any particular order, but relates to indirect labor or other expense items, the same remarks apply, except that these items are not charged to orders but to indirect expenses, as is explained in connection with the pay-roll book.

All the postings to the production order and cost sheet are made from these forms after a summary of the cards chargeable to a given order number has been made according to

FACTORY PAY ROLL

EMPLOYE						DISTRIBUTION OF TIME							DISTRIBUTION				
DEPT	CLOCK NO	NAME	RATE	TIME	AMOUNT	MON	TUES	WED	THURS	FRI	SAT	SUN	DIRECT	INDIRECT	SUPERVISION	POWER	MAINTENANCE

FIG. 17

department. The time reports should be entered in the pay roll for pay-roll purposes, and also for determining the indirect labor according to departments.

30. Pay Roll.—All the information called for in the several columns appearing in the pay roll, Fig. 17, can be obtained from the time reports. The purpose of the pay-roll form is to show the time of each employe daily for pay-roll purposes, and at the same time to distribute the time at the end of the week in order to ascertain the amount chargeable to expense accounts, such as indirect labor, supervision, power, maintenance, etc., and in order to indicate the exact amount charged to orders, which should be entered in the column headed Direct. The entries on any line in these columns when added together should equal the employe's pay, and the total of the pay roll should, of course, equal the distribution of the pay for all employes. At the end of the week, after paying off, the total amount of this distribution should be charged to the several accounts shown at the head of the columns under the heading Distribution, and the amount credited to pay roll, which account should be charged through the cash book with the amount of the check. If desired, however, this journal entry or credit to the pay-roll account can be made at the end of the month for all the pay rolls together, which method would reduce the number of entries. The result, of course, will be the same, and will balance the pay-roll account. The object in keeping the pay-roll account, instead of entering the distribution in the cash book, is to show the amount of the pay roll from week to week, month to month, etc. on one account.

The pay-roll form here illustrated is executed in duplicate; that is, a short copy extending to the column headed Rate is intended to be used where the employes are seldom changed, as it saves the rewriting of names each week. The second, or duplicate, sheet is the actual pay roll, and a separate sheet is used each week. The first sheet represents only a list of the employes, the names not appearing on the second copy. If desired, only the second copy may be used and the names rewritten weekly.

31. Finished-Product Stock Record.—A form similar to that shown in Fig. 18 may conveniently be used in a special-order system of this character. A separate card should be used for each article manufactured and carried in stock. The information called for, under the heading Production, should be taken from the production order and cost sheet as each order is completed, the cost sheets being filed in a separate file for finished orders. The sales sheet or the record of goods actually sold should be posted to this card under the heading Shipments in the columns provided for that purpose, the posting being

STOCK CARD
FINISHED PRODUCT

Classification No._____
Maximum_____
Article_____ Minimum_____

DATE		PRODUCTION			SHIPMENTS			BALANCE		
		QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT

FIG. 18

done daily. The entries in the column headed Balance represent the difference between the first two columns and show the balance of stock on hand, as well as the quantity and cost and the average cost per unit of rate. In this respect, attention is directed to the fact that all the columns headed Quantity represent the cost and not the selling price, which has nothing to do with the stock records.

32. Statement of Factory Expenditures.—As will be observed, the statement of factory expenditures, Fig. 19, does not provide for the distribution of factory charges by operating departments. The method provided in this system for

STATEMENT OF FACTORY EXPENDITURES

ACCOUNT	CURRENT MONTH				CURRENT FISCAL YEAR TO DATE			
	AMOUNT		TOTAL		AMOUNT		TOTAL	
Material								
Direct Labor								
Indirect Expense:								
Labor								
Supervision								
Supplies								
Light, Heat and Power								
Maintenance								
Insurance								
Taxes								
Telegraph and Telephone								
Printing, Postage and Stationery								
Salaries of Factory Clerks								
Incidentals								
Depreciation								
Total Factory Expenditures								
Inventory (Beginning of Period)								
Total								
Cost of goods sold								
Inventory (End of Period)								

FIG. 19

the distribution of indirect expenses consists in spreading the distribution over the costs as a whole and not departmentally. It may be used with fairly accurate results if the business is very small, or if the product is uniform in character and passes through all the operating departments. Otherwise, the proper form to use would be one on which the expenses are shown according to operating departments.

33. The method of preparing the statement of factory expenditures is identical with that of preparing a trial balance, but the accounts are so grouped as to show the amount of direct labor and material purchased, as well as the total indirect expenses in analytical form for both the current month and the fiscal year to date; that is to say, for 2 or 3 months, as the case may be, depending on the time elapsed since the beginning of the year. The indirect expenses for the month, as well as for the year to date, should be divided by the direct labor for the corresponding period, in order to ascertain the per cent. of indirect expenses to direct labor and thus be able to charge the proper burden to each order, as previously explained. The total expenditures, that is, material, direct labor, and indirect expenses, added to the inventory at the beginning of the period, less the cost of the goods sold during the period will equal the value of the inventory at the end of the period.

34. In a small business it would not be necessary to keep a separate book as a factory ledger, in which case all these accounts would appear in the general ledger. If, however, it is not desired to keep accounts in analytical form as listed under indirect expenses in the form illustrated, the three accounts appearing at the beginning of the schedule, or one account called *factory*, will answer the purpose; but it would be necessary to dissect, or analyze, this account item for item if a statement such as presented is desired. Assuming that the accounts will be kept according to this schedule, another account not listed should be opened in the ledger, namely, *factory*, and all the accounts shown in this schedule should be transferred to this account at the time the books are closed. The inventory at the beginning of the period is carried in the factory

account, and no other inventory of any description appears in any of the other accounts. The cost of goods sold during the month should be credited to the factory account, and the difference between the beginning inventory and all the goods purchased and expenses incurred during the period, as shown in this schedule, will represent the inventory at the end of the period, provided the costs are correct.

35. Sales Sheet.—As the basis of this system must be the cost of sales, which means the cost of goods sold, the sales sheet shown in Fig. 20 or one similar in design is absolutely necessary.

A. B. CO.
MANUFACTURERS OF
STOVES, RANGES AND FURNACES

Sold to .....
Address ..... New York .....

	DESCRIPTION			SELLING PRICE	
	CLASSIFICATION	ARTICLE	QUANTITY	RATE	AMOUNT

No. of Pkgs.	Shipped to	By Frt. .....
Ship. Wt.	Via	By Exp. .....
Frt. Rate	B/L in name of	Prepaid .....
Pkg. Chg.	Date Shipped	Col. .....

FIG. 20

In this special-order system the form is executed in triplicate, but as many copies as desired may be made out. The original constitutes the bill and is sent to the customer. The duplicate is sent to the shipping clerk. The triplicate represents the sales sheet, and differs from the original only in having the cost price of the goods sold entered in the column provided for that purpose, so as to obtain the necessary information to show the profit and inventory according to the plan outlined.

The cost price can be obtained from one of two sources—from the production order and cost sheet in the case of special orders, and from the stock card for finished products if the goods sold are taken out of stock. The sales sheets should be numbered consecutively and registered in the register of sales and costs, which is described later.

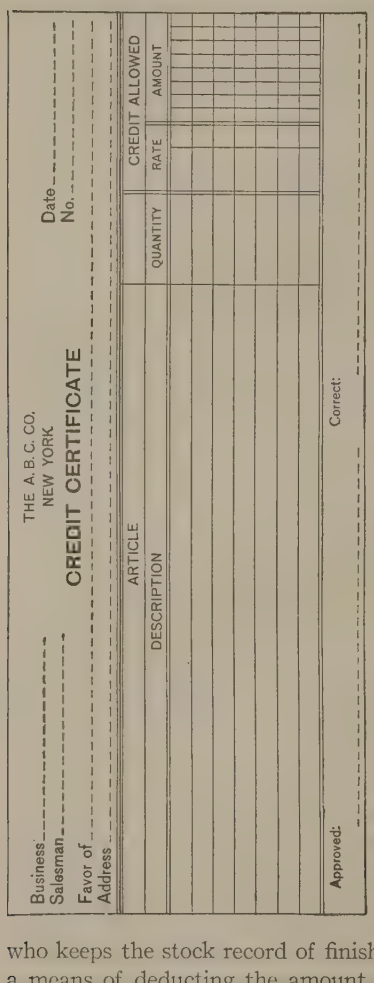


FIG. 21

36. Credit Certificate.—The credit certificate, an original and a duplicate of which is illustrated in Figs. 21 and 22, respectively, is the reverse of the billing system just described, its purpose being to issue a credit memorandum to customers for goods returned. The object in using the duplicate of the credit certificate is to procure an exact copy of the certificate sent to the customer; to provide for entering the cost price and the selling price of goods returned for the information of the individual who keeps the stock record of finished product; and to provide a means of deducting the amount of returns from the proper sales accounts.

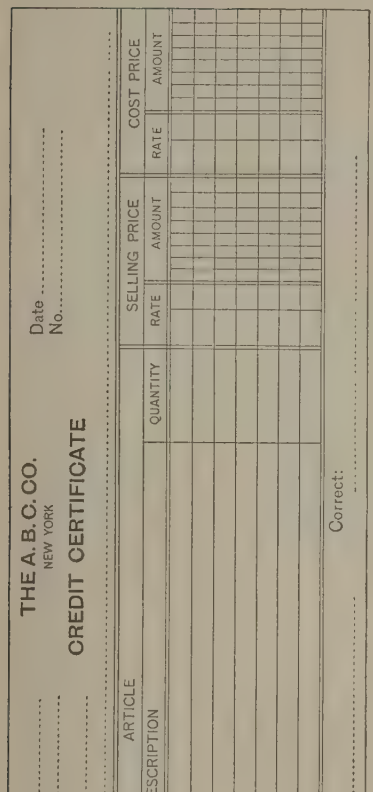


FIG. 22

The form should not be issued until a receiving report has been turned in showing that the goods have actually been returned; and in that case the clerk in charge of the finished-stock records should add the amount to the stock card for the article returned, either in the production column in black ink, or as a deduction in red ink in the shipment column, and increase the balance in either case.

The duplicate credit certificate should be entered in the back part of the register of sales and costs; and the total returns and allowances for the month, both at selling price and cost price, should be deducted from the sales before posting to the ledger at the end of the month.

37. Register of Sales and Costs.—In the register of sales and costs, Fig. 23, are registered the sales sheets previously described, the object being to classify the sales at the selling

REGISTER OF SALES AND COSTS

For the Month ..... 19....

SALES										COST OF SALES				GROSS PROFIT	
DATE	SALES SHEET NO	NAME	TERMS	SALESMAN	FOLIO	ACCOUNTS RECEIVABLE	A	B	C	A	B	C	FACTORY	AMOUNT	%

FIG. 23

price and cost price for the month. The total amount of the sales should be entered in the accounts-receivable column and distributed in the other columns according to the classification of sales. The cost, or the amount of the bill, should be entered in the columns under the general heading Cost of Sales, according to the kind of product, and the total entered in the column headed Factory, the factory column representing the total cost of the order or sales. The difference between this column and the column headed Accounts Receivable should be entered in the columns headed Gross Profit, which shows the profit on each order, as well as the total profit for the month.

At the end of the month, after the distribution has been proved, the books should be summarized and all totals entered in ink. The results should be posted to the general ledger, to the credit of the proper departments, at the selling price, and the cost price should be charged to the proper departments and credited to the factory account. It is to be understood, of course, that the individual sales at the selling price are to be debited to the customer. The column headed Gross Profit should not be posted.

38. Register of Accounts Payable.—A register of accounts payable of the same character as that shown in Fig. 6 may be used with this system, and as it has been explained in connection with the departmental cost system, it will be unnecessary to add any further description at this point.

39. Additional Forms.—The following forms would be used in connection with this kind of special-order system to make it complete: Inventory of material, statement of profit and loss, and balance sheet. As all of these forms have been previously illustrated and explained, it seems unnecessary to repeat them here.

PROCESS OR MACHINE-COST METHOD

40. The difference in principle between the process or machine-cost method of gathering cost data and the productive labor method lies in the way in which the charges are collected. In the productive-labor method, costs are charged against specific articles by classification according to the

factory-order number, the factory-order number carrying the direct costs from the inception of manufacture; in the present method, the costs are charged against either a particular machine or a group of machines of the same character or process. The point is to obtain the total expense chargeable to either machines or processes, and to include, as well, the actual working hours of the machine or process during the month, so that the actual costs per hour may be obtained.

41. Wherever it is possible to introduce a process method by which the costs may be gathered through production centers, the costs will be more accurate and considerable time will be saved in the compilation and distribution of the data.

It should be the aim in all systems so to apportion charges as to make the arbitrary distribution of the other elements as small as possible. In this system, many items, such as power, maintenance, depreciation, supplies, insurance, and rent, may be made practically a direct charge instead of an indirect one.

42. Attention is again called to the use of forms, some of which are the same as those used in other systems. There are certain forms that are somewhat standardized, and may be used in any complete cost system, as, for instance, the purchase requisition, the purchase order, the inventory of material, the pay-roll book, sales systems, the profit-and-loss statement, and the balance sheet. The forms not standardized are illustrated for several purposes, namely, to illustrate clearly a particular principle; to help in a clear understanding of a particular system; and for reference in the changing or designing of new forms.

43. It might be well to emphasize the fact that it is not the intention to have any of these systems apply to any special or particular kind of manufacturing business, but merely to set forth the principles involved and to exhibit designs as applied to certain conditions in manufacturing. In the devising of a system, these methods may then be adopted with the changes that would be necessary according to peculiar conditions.

In a system of this character, the following forms may be used, as before: Purchase requisition, Fig. 8; purchase order, Fig. 9; report of material received, Figs. 10 and 11; and raw-material stock card, Fig. 12.

44. Production Order and Cost Sheet.—The number of copies of the production order, Figs. 24 and 25, required will depend entirely on the use that is made of this form in a particular plant. In general, the original would give a brief description of the order to manufacture. The short copies would be sent to the foreman of the first operating department. The duplicate should remain in the office, and is intended

Original

PRODUCTION ORDER AND COSTS

To ..... Date Issued .....

Date Completed..... Date Wanted .....

DESCRIPTION

FIG. 24

for the purpose of ascertaining the time, in hours, chargeable to the order according to each operation or process. The postings to this form, so far as labor is concerned, would be made from the time reports, which must show the order number, the operation or operating department, as well as the time. No distinction is made between employes or their daily wages in posting the data to the production order. All that is necessary is to enter the number of hours for each operation or machine or operating department. At the end of the cost period, the total time appearing in each operation column would be ascertained and the process or machine rate entered,

this information being obtained from the process or machine-cost record, which is explained later. The total number of hours multiplied by the rate per hour of each operation will give the process or machine cost chargeable to the order according to machine, operation, or department. The totals of these operations added together will give the total cost of the operations chargeable to the order, and will include indirect or

Duplicate

PRODUCTION ORDER AND COSTS

To ..... Date Issued .....
Date Completed ..... Date Wanted .....

DESCRIPTION

Date	OPERATIONS									
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10
TOTAL TIME										
COST PER HOUR										
PROCESS COST										

Date	MATERIAL USED				SUMMARY	
	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ANALYSIS	AMOUNT
					Material	
					Process Cost	
					Total Cost	
					Quantity	
					Price	
					Selling Price	
					Gross Profit	

FIG. 25

overhead expenses, as is explained under the heading Process Cost Records. The cost of the material used should be entered on this order from the material requisition, Fig. 16. The total cost of the material would be entered on the right of the production-order-and-costs form under the heading Summary, and the total process or machine costs would be shown in the upper section of the form; these, added, give the final cost of the order.

45. Time Report.—A design similar to that shown in Fig. 16 may be used as the time report if provision is made for indicating the operating department. Attention, however, is called to the fact that in this instance only the time is charged to the order, no amounts or labor costs appearing on the cost sheet for separate orders. The labor cost shown by these time cards is summarized according to process or machine number, and becomes a part of the machine or process rate.

If several machines of the same kind are in operation, they may be grouped together, and the total labor cost shown by these time reports as chargeable to a process or machine entered at the end of the week or the month on the machine or process-cost record. The group of machines or process is, in effect, an operating department. The total number of operating hours shown by all these time reports represents the same number of hours and minutes charged separately to each order. After this has been done, the time reports may be filed in any way that is found convenient, the entries having been made, of course, in the pay-roll book daily so as to ascertain the amount of wages due to each employe. This distribution of time, however, must be accurate, as the total amount charged in these cost records against the several operations must correspond with the total amount of the pay roll for the week or the month. This is important if accurate results are to be obtained and a balancing system kept in operation.

46. Pay Roll.—The same general remarks relating to other systems apply also to the pay-roll form, Fig. 17, except as to uses made of it. If a record of time can be kept along the lines laid down, it will be seen at once that the amount of direct labor increases in this system; whereas, the indirect labor, as well as the maintenance, is less. This is due to the fact that more labor can be charged against a machine or process than can be charged to the product direct; and herein, as well as in other respects, this system, in places where it can be installed, is to be preferred to the other. The direct labor appearing in this pay roll should be verified with the machine and process cost records in order to prove the accuracy of the distribution.

47. Finished-Product Stock Card.—The explanation used in the description of the finished-product stock card, Fig. 18, applies in this system.

48. Process Cost Records.—The basis of this cost system is illustrated by the form shown in Fig. 26, and in its design

PROCESS COST RECORD

No.....

.....Department-For the.....

Machine No..... .....Operation.....

DISTRIBUTION							
Time							
Begun							
Finished							
Hours							
Idle							
Machine Costs							
Day Work							
Piece Work							
Supplies							
Power							
Floor Space							
Maintenance							
License							
Depreciation							
Insurance							
Indirect Expenses							
TOTAL							
Cost per hour							

FIG. 26

lies the principal difference between this cost system and other systems. By following the remarks carefully, it will readily be seen how this cost system will produce more accurate results from a cost-distribution standpoint than any other method known.

As in the case of other forms, the one illustrated admits of change, not only as to the arrangement of the columns and analysis of the cost, but also as to an entire rearrangement of

the information; but it must be kept in mind that the same results, that is, the operating hours and the various machine or process costs, are to be recorded.

49. To illustrate, take the present form, which provides for the distribution of time and cost on the side of the form and the operations at the top of the various columns. By leaving the columns last mentioned blank and using a separate card for each operation or machine, the columns may be headed according to days, weeks, or months, without changing in any way the present ruling and without affecting the results to be accomplished. On the other hand, the form may be redesigned and the distribution of the time and cost entered at the top of the columns and the operations entered on the side, and the form used as a daily, weekly, or monthly record for all operations in the plant. Where this is done and the form is used for recording daily transactions, naturally a separate record in the form of a sheet or card must be used each day and summarized according to weeks or months.

50. The information for this record is obtainable from the time reports, so far as hours and labor cost are concerned; from the material requisitions for supplies used; and from the general books for all the other items except power.

The labor charges should be obtained by sorting all the time reports relating to the same operation and ascertaining the total labor chargeable to the operation, as well as the number of operating hours and minutes charged to the various order numbers shown on the time report.

After this has been done, the supplies chargeable to each process or operating department should be ascertained and entered against the operation chargeable.

The next element of cost relates to power, provided the operation is performed on a machine. A detailed explanation has been given of power cost and distribution, and it will be sufficient to say at this time that the rate per horsepower-hour, and not horsepower, should be multiplied by the total operating hours of the machine and the amount entered as the cost of power. It is clear that it would be unfair to distribute

power cost against the machine merely on the basis of horsepower, as the machine might not, and very likely would not, be operating full time.

51. The next item relates to floor space, which is obtained from the general books in the following manner: The total floor space of the plant should be ascertained by departments and should be reduced to square feet. Then the amount of rent paid, or the equivalent to rent, should be divided by the total number of square feet and the rate per square foot ascertained. The space occupied by each machine or process should then be calculated; this number multiplied by the cost per square foot will give the amount to be charged in this form as floor space.

If the property and plant are owned by the individual or company operating the plant, the amount of rental equivalent should be ascertained by taking into consideration interest, taxes, maintenance of buildings, insurance on buildings, the cost of ground maintenance, and any other items that may relate to the cost of maintaining the grounds and buildings. These items are the ones previously referred to as rental equivalents.

52. The next item appearing is that of maintenance. This cost is obtained in part from the time reports and in part from any material used from the requisitions just mentioned, the total being entered against the operation to which the repairs relate.

53. The item license can be obtained from the general books; it represents charges made in some states and cities for the privilege of operating certain kinds of machines. Where this applies, it should, of course, be charged to the machine.

54. The depreciation appearing in this form is taken from a regular schedule after it has been calculated, and the same amount may be entered each month, as the total of all these charges to the operations for depreciation will appear in the general books. The methods of treating depreciation have been given previously; nevertheless, it might be well to outline

here the customary way of calculating it. Estimate the life of a particular machine based on running full time. Then ascertain the amount of the depreciation per hour, and charge the machine, at this rate, for the actual working hour. If this is done, the amount of depreciation charged to the machine will be different each month, as will also the total amount of depreciation appearing in the general books. More accurate results will be obtained, however, because, as must be admitted, depreciation is based on the number of hours that the machine actually works. This does not mean that a machine may not depreciate in value and in fact become worthless, due, perhaps, to modern inventions, but as the term is generally understood, it does apply.

55. The insurance charged to the machine is based on the average rate of the various insurance companies, and can be taken from the insurance policies, a schedule being prepared that will answer until the insurance rates are changed. The total of the insurance so charged to the machines or operations must correspond with the entries made in the general books, and it is credited to either a reserve fund or to deferred charges; that is, if the insurance is paid in advance, it should be carried as a deferred charge in the general books, and if the reverse is the case it should be credited to the reserve fund for insurance. When the insurance is paid later, the reserve fund should be charged by this amount.

56. The next item appearing is that of indirect expenses. These can be obtained by dividing the indirect expenses as shown in the general books by the total direct labor, also shown. The labor charged to each machine or process is then multiplied by the per cent. thus obtained, and the amount entered against the operation or machine; or the total indirect expenses may be divided by the machine hours and the rate per hour ascertained, and this multiplied by the hours charged to each machine or operation will give the amount chargeable to the machine or operation. The conditions existing in a plant will necessarily indicate the method to use.

57. From the foregoing it will be seen that all the cost relating to manufacturing, except cost of material, has been charged against each operation or machine, and that the total number of hours also appears. The next step, of course, is to ascertain the cost per hour, which is only a matter of division. This being obtained, the manufacturer has a record of the actual

POWER COSTS AND DISTRIBUTION

For the month of..... 19....

ANALYSIS	COST	DISTRIBUTION	DEPT.	HORSE-POWER	RUN-NING TIME	H. P. HOURS	POWER COST
Rental Charge		Machine No. 1	A				
Depreciation		Machine No. 2	A				
License		Machine No. 3	A				
Inspection		Machine No. 4	B				
Insurance		Etc.	C				
Fuel			etc.				
Water							
Repairs							
Oil, Waste, etc.							
Engineer							
Firemen							
Incidentals							
TOTAL							
Horsepower Hours							
Horsepower Distributed							
Horsepower Developed							
Horsepower Loss and Transmission							
Cost per Horsepower Hour							

FIG. 27

cost of operating each machine or of each process in his plant; and with this information all that is necessary is to apply this rate to the various orders passing through any or all these operations by keeping a record of the time each order has consumed in any particular operation. Then, multiplying the number of hours by the rate per hour, the process, or machine,

cost will necessarily be determined, which, as has already been shown, includes the indirect expenses.

58. Power Cost and Distribution.—As has been said, the power cost is distributed among the operating machines on a basis of the cost of a horsepower-hour. The method of arriving at this cost is substantially the same as in the case of the machine or process cost; that is to say, the rental charge, depreciation, insurance, and license, together with the other items appearing under the heading Analysis on the form shown in Fig. 27, are obtained from the same sources and in the same manner as the items of cost relating to machines and processes. The total of this cost is divided by the total horsepower-hours of all the machines in the plant to find the cost of 1 horsepower-hour. This unit rate, or horsepower cost per hour, should be multiplied by the total horsepower-hours of each machine, and the amount extended in the column headed Power Cost. The total of this column should equal the total shown in the column headed Cost, relating to the analysis of power cost.

59. Additional Forms.—The following forms will be used in addition to those described, to make the system complete: Billing system, credit certificate, register of sales and costs, register of accounts payable, inventory of material, statement of profit and loss, and balance sheet, all of which have previously been illustrated and explained.

60. Statement of Profit and Loss.—A statement of profit and loss must naturally be prepared from the information contained in the several accounts kept in the ledgers, and as before, all postings in the ledger should be made from the register of accounts payable, the cash book, the register of sales and costs, and the journal, according to the classification of accounts. The accounts used for the profit-and-loss statement are the various sales accounts of the sales departments, in which are entered, on the credit side, the sales at the selling price, and on the debit side the cost of the goods sold for the same period.

Thus, it will be observed that three of the elements already appear in this account; that is, the sales at the selling price,

the cost price, and the balance, or difference, representing the gross profit on goods sold in each of the departments. The other information relates to the selling expenses and administrative expenses of conducting the business, which expenses are posted in the ledger from the register of accounts payable, the journal, or the cash book. If these accounts are divided, that is to say, if several selling and administrative accounts are opened, then the subaccounts should be closed into the general accounts and the total of each of the two main expense accounts prorated or distributed among the sales accounts or sales departments on the basis of business done at the cost price. After this transfer has been made, each department will show the amount of selling expenses, as well as the amount of administrative expenses charged to it, and the department account will then indicate the net profit on the corresponding line of goods.

61. All the balances now shown in the department account, which means the net profits for each department, should be transferred to the general profit-and-loss account, and these accounts, that is, the department accounts, ruled off. If there are any other items of profit of a miscellaneous character entering in the profit-and-loss account, they may be included in the statement as miscellaneous income and added to the net profit from operating, which statement will then show the profit from all sources. The net result shown by this statement should, of course, correspond with the amount appearing in the balance sheet.

COST ACCOUNTING
(PART 8)

PRODUCT SYSTEM

PRODUCTIVE-LABOR METHOD

1. A product system based on the productive-labor method of cost finding is meant to apply to conditions where the product is manufactured and carried in stock from which customers' orders are filled.

There are certain classes of business in which it would be impossible to carry the costs on a particular production order for a particular customer from the time the costs first begin to accumulate. A tannery or a tobacco business would particularly illustrate this point. In both of these industries, while raw material may be purchased for the purpose of filling certain orders or for the manufacture of a distinct article, yet, in the beginning processes, it would be impossible to determine the exact classification that the material would be finally applied to.

2. It might be well at this point to emphasize the fact that there are many kinds of manufacturing in which it is absolutely necessary to use both the special-order and the product system. In most of these cases the product system would be used up to a certain point in the manufacture and covering a certain number of operating departments, after which the special-order system would have to be introduced.

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It may also be well to bear in mind that both the productive-labor method and the machine-cost method must often be used in the same plant.

Whether or not one of these plans as a unit is to be introduced in a plant, or a plan comprising certain parts of each plan, is a question that can be determined only by the individual case. The principal difference between this system and the special-order system, according to the productive-labor method of cost finding, lies in the fact that in this system

REPORT OF MATERIAL RECEIVED. No.....

Purchase Order No.....

Requisition No.....

Name ..... Date .....

	ARTICLE					
	ITEM NO.	CLASS NO.	DESCRIPTION			

REPORT OF MATERIAL RECEIVED

Purchase Order No. ..... No. .....

Requisition No. .....

Name ..... Date .....

ARTICLE						COST		
ITEM NO	CLASS NO	DESCRIPTION				PUR PRICE	RATE	AMOUNT

CHARGES		DISTRIBUTION			
DESCRIPTION	AMOUNT	DEPARTMENT	ACCOUNT	FOLIO	AMOUNT

Received by: ..... Entered by: .....

FIG. 2

STOCK-RAW MATERIAL

Lot No.....
Maximum .....
Minimum.....

Article.....

ORDERED			RECEIVED					DELIVERED				BALANCE		
DATE	PURCHASE ORDER NO	QUANTITY	PURCHASE ORDER NO.	MATERIAL RECEIVED SHEET NO.	QUANTITY	RATE	AMOUNT	SHEET NO.	QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT

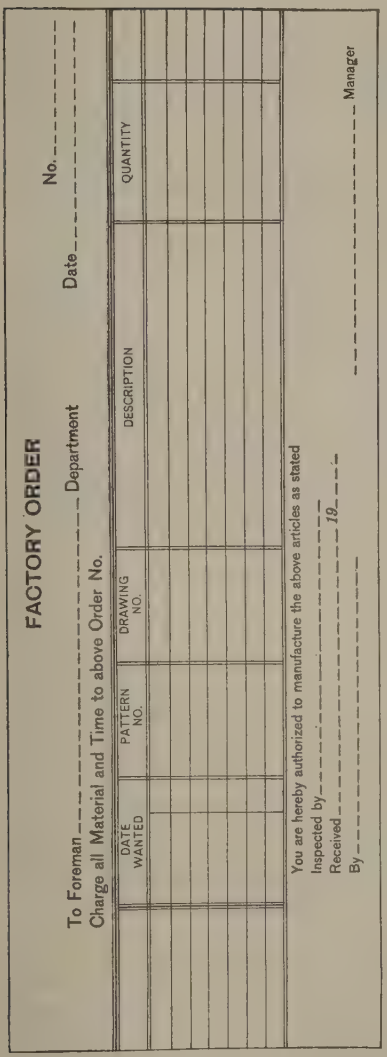


FIG. 4

system is more complete and will naturally insure a more accurate distribution of indirect expenses.

The purchase requisition and the purchase order, as heretofore explained, may be introduced, or any form of a similar character may be used.

4. Report of Material Received. The introduction of a report of material received, Figs. 1 and 2, in a product system will depend entirely on the class of raw material received, and whether or not it is desirable to apportion the charges on the material-received sheet rather than on some other record. It will also depend on whether the goods are bought f. o. b. shipping point or not. If they are, the question is, as before, whether or not the freight charges would be of sufficient importance

to be included in the material cost. If they are not, they must be distributed as a department or general overhead cost.

5. Raw-Material Stock Record.—The style of stock record for raw material used in this product system is shown in Fig. 3. The introduction of a new kind of form for recording raw material is merely for the purpose of showing what additional information may appear on this form, and therefore does not require any special explanation as to its application in this system.

6. Factory or Production Order.—A form similar to that shown in Fig. 4 may be used in this product system, as the costs are not to be compiled on the order.

7. Material Requisition.—Fig. 5 shows the style of material requisition required in this product system. The

MATERIAL REQUISITION

Department ..... No. .....

ORDER NO.	ARTICLE	QUANTITY

Received by ..... Signed .....

FIG. 5

essential difference between this form and the forms previously shown lies principally in the fact that no cost figures are given on this requisition, the data being summarized and the figures given on the report of material delivered.

8. Report of Material Delivered.—A form of the same character as that shown in Fig. 6 may be used for summarizing the material requisitions referred to, but the column headed Classification No. should be changed to read Product Chargeable, and the word Department should appear on the top of

REPORT OF MATERIAL DELIVERED

For the Month of _____ 19__

	CLASSIFICATION No.	ORDER No.	DEPARTMENT	ARTICLE	QUANTITY	RATE	AMOUNT	TOTAL

Fig. 6

the form instead of devoting a column to that classification. Separate reports must then be made for each operating department.

The report of material delivered makes it possible to ascertain the total amount of material delivered from the storeroom during the month, according to article and chargeable to a particular department, as well as to determine the name of the product for which the material was used and to which it should be charged. The totals shown by this report, after the cost price has been entered and the extensions made, should be transferred to the stock record for raw material, according to the article. After this has been done, a charge should be made

in the cost sheet for the amount of material chargeable to the product or to the article manufactured from this material. The total amount of material used in any one department should be entered in the operating ledger from the report to the credit of the storeroom account, and to the debit of the department in which the material was used.

9. Day-Work and Piece-Work Reports.—A time report similar in design to that shown in Fig. 7 could be used with propriety in this product system. This form will be found to

TIME REPORT

Name _____ Department _____
Occupation _____ Date _____ Clock No. _____

DAY WORK

ORDER NO.	KIND	OPERATION	TIME	RATE	AMOUNT

PIECE WORK

ORDER NO.	KIND	OPERATION	QUANTITY	RATE	AMOUNT

Quantity O.K. Price O.K. Amount O.K.

FIG. 7

be an advantage in a plant where the employes are engaged part of the time on day work and part of the time on piece work. Two separate forms may be used, however, if desired. In any event, the time reports should be entered, after being duly approved, in the pay-roll records, and also entered in the cost record and charged on the cost sheet to the proper article shown in the time report.

As this system is based on the productive-labor method, it will be necessary to extend the time of each employe by

FACTORY PAY ROLL

For.....Week ending.....19.....

	EMPLOYE						DISTRIBUTION				
	DEPT.	CLOCK No.	NAME	RATE	TIME	AMOUNT	DIRECT	INDIRECT	SUPERVISION	POWER	MAINTENANCE

entering the rate of pay and extending the amount, but care must be taken in posting these labor charges to the cost sheet to indicate the department in which the work was done.

As the indirect expenses will not be distributed on the total labor, but on the amount of labor in each department, separate percentages for each department must be computed.

10. Pay Roll.—The pay-roll form shown in Fig. 8 would be suitable for use in the product system under discussion.

11. Cost Record.—A separate cost sheet, Fig. 9, is kept for each manufactured article. All the labor charges should be taken from the time reports, and this labor should be entered according to department, so that the indirect expenses may be distributed over the labor of each department. When used in this way the heading Operation in the form is equivalent to operating department. It may prove more convenient, however, to have two sets of cost sheets, one for each article and one for each department. The summaries of each sheet may then be posted to the factory ledger without any further analysis. The production should also be entered under the heading Labor in the column headed Quantity; the material cost can be taken from a requisition, but, preferably, from the report of material delivered. After the indirect expenses for each department have been entered, based on the amount of labor charged, the total of the three elements of cost should be entered in the column headed Total Cost.

12. To illustrate how the indirect expenses should be figured, suppose that $12.50 is charged to an article for labor, $5 of which emanates from department A, and $7.50 from department B. If the expenses in department A are calculated as 50 per cent., $2.50 would be charged for indirect expenses to the article for work done in that department; and, on the other hand, if the expenses in department B figure 100 per cent., the expenses charged for work done in this department would be $7.50. These comparisons also serve to illustrate the method of entering the indirect expenses, as well as to

COST SHEET

Article.....

DATE		LABOR					MATERIAL					INDIRECT EXPENSES	TOTAL COST
MONTH	DAY	OPERATION	CHECK NO	QUANTITY	RATE	AMOUNT	DESCRIPTION	REQUISITION NUMBER	QUANTITY	RATE	AMOUNT	AMOUNT	AMOUNT

show the importance of dividing the expenses according to departments and the effect that it usually will have on proving the accuracy of the cost.

At the end of the month, after the totals have been entered for the articles finished, as shown by the production report for finished product, the cost should be entered on this record for the amount actually expended, and the cost sheet reduced both as to quantity and cost for the amount so finished. The balance, representing goods in process of manufacture, is brought down for the next month, and this balance should indicate the quantities and costs in the various operations or departments.

13. Production Report.—Fig. 10 illustrates another type of production report. It is presented more to show the type of the form than any particular purpose that it may have in this system. Other kinds of production reports could be used to as good advantage as this one.

The report should be made out by the superintendent, the foreman, the stock clerk, or some other individual under the immediate supervision of the superintendent or the manager of the factory. The report relates to finished product only, but it may be used to show the production of a particular department or operation, as well. As can be seen, twenty-seven columns are provided for the working days of the month. The dates should be entered at the top of these columns, and a list of the articles manufactured should be printed on the left of the form under the heading Articles. The daily production of each of the articles listed should be entered in these columns, and the total for the month extended in the total column. After this report has been approved by the superintendent or the manager of the factory, the cost of each article, as shown in the cost record, is entered in the column headed Rate, and the amount or total cost of each article produced during the month is extended in the column headed Amount. All the articles finished should then be transferred or posted according to article from this report to the finished-stock record.

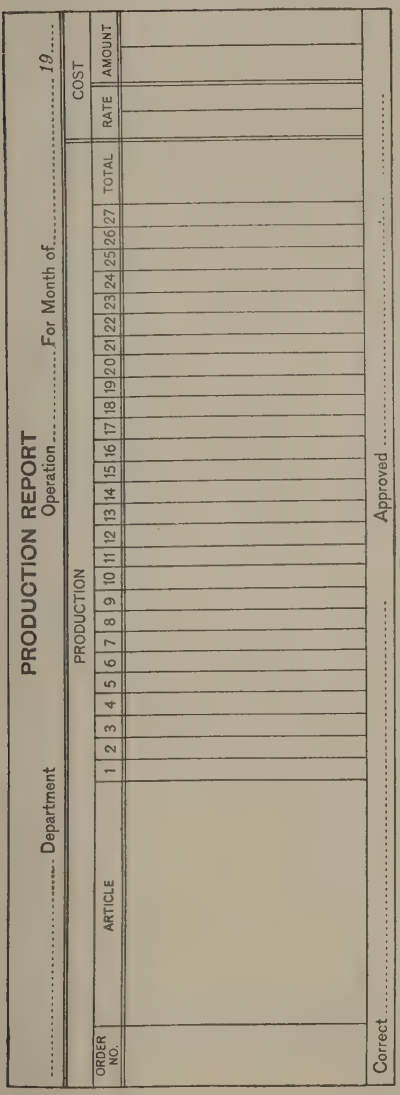


FIG. 10

14. Stock Record of Finished Product.—A separate sheet like that shown in Fig. 11 should be used for each kind of article carried in stock. The inventory at the beginning of the period when this system is installed should be entered in the column headed Balance, both as to quantity and inventory cost, and the rate indicated. All the information relating to production can be obtained from the production report just mentioned. As each of these entries is made, the balance shown at the extreme right of the sheet should be increased to correspond. The unfilled orders on hand at the time the system is installed should also be entered according to article; and any orders received from customers for this particular article should be entered in the columns

Stock
Finished Product

Sheet No. _____
Maximum _____
Minimum _____

Article _____

Date	PRODUCTION				ORDERS		SALES				COST OF SALES		GROSS PROFIT		UNFILLED	BALANCE		
	Report No.	Quantity	Rate	Cost	Received	Cancelled	Sheet No.	Quantity	Rate	Amount	Rate	Amount	Amount	Rate per.....	Orders	Quantity	Rate	Amount

FIG. 11

DEFECTIVE WORK REPORT

_____ Department For _____ 19___

		ARTICLE	DEFECT	CAUSE	DISPOSITION	QUANTITY	RATE	AMOUNT

provided for that purpose. If any of these orders are canceled before the goods have been shipped, this fact should also be indicated, and the column headed Unfilled Orders changed. The information relating to sales at both the selling price and the cost price can be obtained from the sales sheet at the end of the cost period. The balance of stock on hand, of course, should be changed as the entries are made, and care should be taken in reducing this balance at the end of the period to use the cost price of the goods sold, and not the selling price.

15. Defective-Work Report.—The defective-work report, Fig. 12, is used to bring to light defective work or shop errors that usually occur in every plant, the object being to ascertain the cause and to reduce the amount of such work or loss to a minimum. The disposition of defective work will depend on the nature of the business. It can be charged either to a defective-work account and included in the indirect expenses or to the product for which it was intended, which will increase the average cost per article of that product. Where some of the material is reclaimed from defective work, the difference between the cost of the work spoiled and the amount received or the value of the reclaimed stock can be charged according to either method mentioned. If part of the stock is to be used again in manufacturing, this should of course be transferred to the stock records for raw materials.

16. Statement of Factory Expenditures.—A statement of factory expenditures similar to that shown in Fig. 13 should be used in any complete system of cost finding where the distribution of indirect expenses are based on productive-labor cost. A detailed explanation of this form and its use need not be given here, as it has been fully explained previously.

17. Operating Ledger.—The voucher system of accounting, which is introduced later, is operated in conjunction with a distribution book of the kind shown in Fig. 14, although entries may be made, and, in fact, should be made from other books, as was previously explained. The use of the ledger serves to reduce the size of the voucher register or register of accounts

STATEMENT OF FACTORY EXPENDITURES

For the month of _____ 19__

Accounts	Department 1	2	3	4	5	6	7	Total
Direct -								
Material	1 156 50	42 38	534 12	3 046 32			119 30	8 898 92
Labor	4 018 85	292 94	1 370 80	2 867 98	1 093 06	412 70	879 94	10 936 40
Total	5 175 18	335 32	1 904 92	5 914 30	1 093 06	412 70	999 24	19 835 32
Indirect -								
Labor	841 78	197 62	536 52	265 24				1 839 16
Supervision	312 48	8 50	179 36	190 22	59 34	24 64	200 32	975 44
Supplies	78 90	3 26	71 52	126 78	168 96	232 84	96 16	1 388 42
Light, Heat and Power	2 840 20	37 48	129 42	230 00	71 80	180 18	84 64	3 623 92
Freight, Express & Cartage (Inward)	22 44	3 06	10 62	18 86	5 88	2 48	7 02	70 34
Maintenance	1 303 10	177 22	616 78	1 095 36	341 86	142 90	407 68	4 084 84
Incidentals				64 10		45 90		110 00
Depreciation	849 91		283 08	566 18	94 36	94 36		1 887 24
General Operating Expenses	303 67	58 68	274 16	575 59	218 78	82 54	175 98	2 187 25
Total	7 612 03	485 72	2 101 64	3 118 37	960 98	805 82	962 30	16 107 31
Total Expenditures								35 942 63
Material-Finished and in Process (beginning of period)								49 444 86
Grand Total								85 387 49
Cost of Sales								53 756 06
Material-Finished and in Process (end of period)								42 597 43

Store Room

Operations	Amount
Inventory (beginning of period)	20 173 58
Purchases	19 162 68
Total	39 336 16
Delivered to Operating Depts	8 898 92
Inventory of Raw Material at end of period	30 437 24

Operating Expenses

Account	Amount	Total
Superintendence		184 32
General Labor		967 19
Light, Heat and Power		198 68
Insurance		375 14
Taxes		246 83
Freight, Express & Cartage (Inward)		109 46
Factory Supplies		16 21
Salaries of Factory Office Clerks		115 06
Factory Office Supplies		10 72
Incidentals		27 16
Total		2 187 25

Distribution

Departments	%	Amount
No 1	20	803 67
2	20	58 55
3	20	274 19
4	20	379 50
5	20	218 78
6	20	82 54
7	20	175 98
Total		2 187 25

APPROVED _____ CORRECT _____

FIG. 13

ANALYSIS OF EXPENDITURES

OPERATING LEDGER _____ Department

For _____ 19____

DATE	ACCOUNT No.	ACCOUNT												

FIG. 14

payable, since the accounts appear in analytical form. This eliminates the numerous special columns that the register of accounts payable would otherwise have to contain in order to save posting. The object of having these special columns in the accounts-payable register is to enter therein all the charges relating to a particular account, and to post the total of all these items in one account at the end of the month, instead of posting each separately. Consequently, if the business is divided into ten or twelve departments, and each department is divided into a number of accounts showing an analysis of the expenditures or charges, it can be seen that a register of accounts payable provided with all these columns would necessarily be too awkward to handle. For this reason, if for no other, a distribution book, or operating ledger, should be used where these conditions exist.

18. A separate sheet should be used for each department, and all the accounts relating to each department should be entered at the head or top of the several columns—thirteen in all—appearing on this form. The posting to these departments should be done from the back of the voucher, described later, for all the amounts appearing in that column under the heading Operating Ledger. It will be observed that the columns on the voucher read, Department, Account Number, and Amount, and are intended to be used to indicate the department chargeable, which should be designated by a letter, and the name of the account indicated by a number.

These same account numbers and the department letters should appear on this sheet; that is, at the top of the columns reading from left to right. The accounts may be headed Material—No. 1, Direct Labor—No. 2, Indirect Labor—No. 3, etc., meaning, of course, that account No. 1, where it appears on the back of the voucher, should be entered in the column headed Material for the proper department indicated by letter on the back of the voucher.

19. When all the postings have been made to these various departments in this record, not only from the vouchers, but also from the other books of account, and the amounts entered

in the several columns according to the account chargeable appearing at the top of the column, the totals for the month should be entered and this sheet ruled off. After these totals have been proved, or balanced, with the factory account kept in the general ledger, this account will include all the operating department costs kept in the ledger or distribution book, but not the selling and administrative expenses that appear separately in the general ledger.

20. After these accounts have been balanced with the details shown in the various columns or accounts, the result of the entries for the month for each department should be transferred to a summary sheet, using the same design. The columns are then headed January, February, etc. for the fiscal year, and the last column is headed Total. At the left-hand side of this form should be entered, reading from the top of the sheet downward, the names of the various accounts relating to this department that appeared on the previous sheet at the top of the column. The amounts that were entered, so far as the total only is concerned, should be transferred to this summary sheet and entered in the column according to the month in which the entries or transactions occur, opposite the proper account. At the end of the year, the total for each of these accounts should be entered in the column headed Total, so as to show the total expense of this description for the year in each department.

21. After these summaries have been made up for each department, a summary sheet should be prepared. This sheet, in effect, is a trial balance, showing the departments at the head of the sheet and the various accounts on the side of the sheet, reading down, in the column provided for that purpose. The total of all these department sheets and accounts should be balanced with the controlling account kept in the general ledger; that is to say, the factory account will include all the department costs and accounts, and the total amount should correspond with the balance of the factory account in the general ledger.

Attention is called to the fact that a separate department should be established for power, and this expense distributed

among the various operating departments of the factory at the end of each month, on the basis of horsepower consumed in each department; that is, either consumed or indicated.

22. Billing System.—The billing system shown in Figs. 15, 16, and 17 may be used in this product system.

23. Factory Selling Price.—Attention is called to one principle involved in making a complete distinction or separation between the factory and the sales department; that is, the

A. B. CO.
MANUFACTURERS OF
STOVES, RANGES AND FURNACES

Sold to .....
Address ..... New York .....

DESCRIPTION			SELLING PRICE	
CLASSIFICATION	ARTICLE	QUANTITY	RATE	AMOUNT

No. of Pkgs. ..... Shipped to ..... By Frt. .....
Ship. Wt. ..... Via ..... By Exp. .....
Frt. Rate ..... B/L in name of ..... Prepaid .....
Pkg Chg ..... Date Shipped ..... Col. .....

FIG. 15

accounts may be so kept as to have all the profit shown in the various sales accounts or departments, which means kind of goods sold, by including or entering on the sales sheet the actual cost of product manufactured and giving the factory credit at cost, and showing in the factory account only the value of the inventory, no profit whatever appearing.

The other method consists in establishing a standard price at which the various articles manufactured by the factory shall be sold. theoretically speaking, to the sales department by the

factory department, just the same as if they were separate and distinct individuals or companies. When this plan is followed, the factory account should show a profit or a loss that will represent the difference between what the product was sold for to the sales department and the actual cost of production. The chief advantage in adopting a plan of this kind, that is, using a fixed or a stated price at which the factory shall be given credit, is that it puts the superintendent in the position of making the factory account show a profit, or at least no loss,

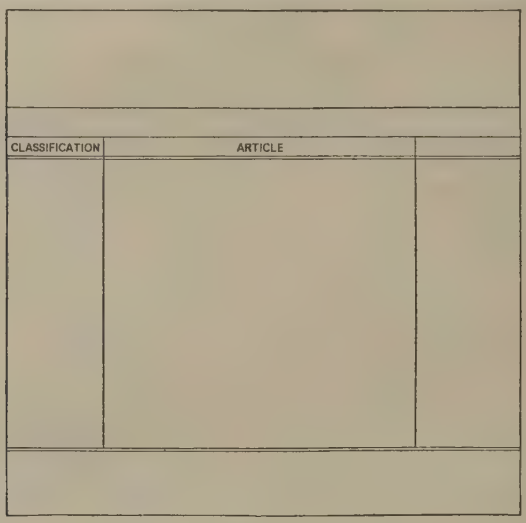


FIG. 16

provided he approves and accepts the selling prices to the sales department. In addition to this, a plan of this kind is particularly valuable where the product could be bought in the open market, possibly at these factory prices if not actually cheaper; and the result will show at the end of the year whether the factory is able to compete with other mills without interfering with the progress of the sales department. For this reason, it puts the management in the position of being able to hold each department responsible for results—the factory for

producing the goods at not more than a stated price on the one hand, and the sales department for marketing the output at a price sufficiently above the purchase price from the factory to produce dividends for the company.

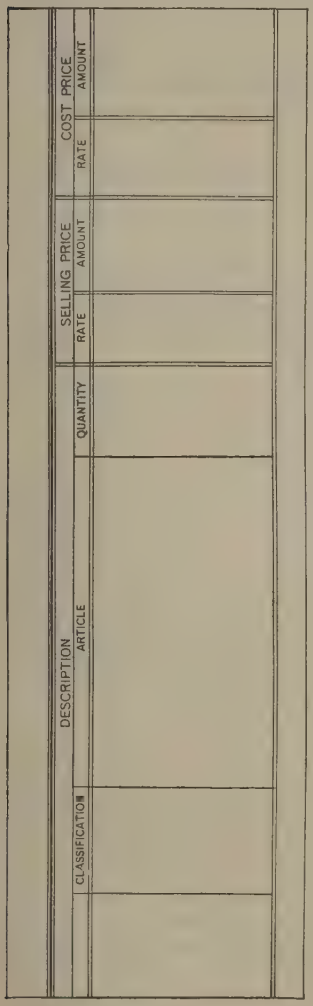


Fig. 17

24. Where this plan is adopted, sales sheets should be used, executed in triplicate, or else an extra column should be added to the regular sales sheet, which would make three columns in all, one showing the price at which the goods were sold to customers by the sales department, the other showing the price at which the goods were sold to the sales department by the factory, and the last column showing the actual cost of production. In posting these amounts at the end of the month, the entries should be made as follows: The first column, that is, the selling price relating to customers, should be charged to customers and credited to the regular sales accounts or departments; the factory selling price shown in that column, meaning the price at which the goods were charged to the sales department by the factory, should be credited to a factory sales account and charged to the

regular sales account in the general ledger. The cost-price column, showing the actual cost of production, should be credited to the regular factory account, showing the inventory, and charged to the factory sales account just mentioned. In all this, it should be understood that a classification of product is made, and that the term sales department means the various departmental accounts under that general head.

25. The effect of this will be as follows: The factory sales account will show the profit, if any, between the price charged the sales department and the actual cost of production. The sales department will show the profit between the amount charged by the factory and the amount actually received for the goods from the customers. Where a factory price is used, in addition to the actual cost price, the profit of the factory, which is really an interdepartmental profit, appears in the books in addition to the information shown by the regular results of the system.

26. The plan by which a department of a factory, or a factory as a whole, sells its product to the sales department is a safe one only when the goods are sold as soon as produced. It should be kept in mind, in considering a plan of this character, that no profits can be earned in any enterprise except on goods actually sold. A good example of where this plan may be used to advantage would be in a case where the goods were sold by one department to another, and not to the sales department. For instance, this condition often exists in a textile company embracing a shop for the manufacture of woolen cloth and one for the manufacture of underwear. As there are many plants devoted exclusively to the manufacture of yarn, it would be of considerable advantage to the management of the company to have their yarn mill sell to the other two mills at market prices. This would create the condition of each mill standing on its own bottom, and would certainly indicate whether or not it would pay the company to manufacture its own yarn or to buy from an independent concern. Furthermore, if a good profit was made at the yarn mill at market price, it would also indicate the efficiency of the other

REGISTER OF SALES AND COSTS

For the month of..... ..... 19.....

DAY	DEPARTMENT "A"			DEPARTMENT "B"			DEPARTMENT "C"			DEPARTMENT "D"			DEPARTMENT "E"		
	SALES PRICE	FACTORY PRICE	ACTUAL COST PRICE	SALES PRICE	FACTORY PRICE	ACTUAL COST PRICE	SALES PRICE	FACTORY PRICE	ACTUAL COST PRICE	SALES PRICE	FACTORY PRICE	ACTUAL COST PRICE	SALES PRICE	FACTORY PRICE	ACTUAL COST PRICE
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															
31															

FIG. 18

mills, compared with other mills of that character, which did not manufacture their own yarn, and had to pay the market price for their raw material.

27. Register of Sales and Costs.—In Fig. 18 is shown the register of sales and costs required in the product system.

ACCOUNTS PAYABLE VOUCHER

No._____

Favor of _____ Date_____

DATE OF INVOICE	DESCRIPTION	AMOUNT OF INVOICE	DEDUCTIONS	AMOUNT PAYABLE

Approved for Payment _____ Correct _____

FIG. 19

The difference between this form and the form shown previously lies in the fact that only the total sales for the day are entered and classified in this system. The totals shown by all

the sales sheets for goods sold during the day would be entered on this form, instead of registering each sale, as in the former case. This form is also more suited to a system in which three elements enter into the sales; that is, the actual selling price, the factory selling price, and the actual cost price. The space between the two guide lines above the three money columns is for entering the distribution or classification of the sales according to the kinds of products sold, representing numerous articles grouped together or classified under these headings. This classification can consist of two or three departments or as many as may be desired, according to the nature of the product and the value of the information to be obtained from classifying the products in such a manner. It is not necessary, of course, to divide the product into departments at all, as one general account showing the sales and profits on the sales will answer in some cases, but usually such division is desirable. If the product is classified, the volume of business done in each department will be shown, together with the profit in each.

28. Accounts-Payable Voucher.—In Fig. 19 is shown the front and in Fig. 20 the back of the style of accounts-payable voucher required in this system. As its name indicates, this form is for the purpose of obtaining a proper voucher for all entries relative to expenditures connected with the business, and is also used in this instance for purposes of classification. A separate voucher may be used for all the transactions affecting one individual or company for the entire month, or several vouchers may be made out during the month whenever remittances are made. Attached to this voucher, however, should be a copy of the purchase order showing the goods ordered, a copy of the receiving report showing the goods actually received, and the invoice. These documents should be attached to the voucher for every entry or invoice entered on the voucher. These entries, after being approved, may be made on the voucher as the bills are received; but it is not necessary to make the distribution until the end of the month, or whenever it is desired to make remittances. In such an instance, the invoices attached to the voucher should be analyzed and the department

and accounts chargeable entered on the back of the voucher under the general heading Operating Ledger. The total of all

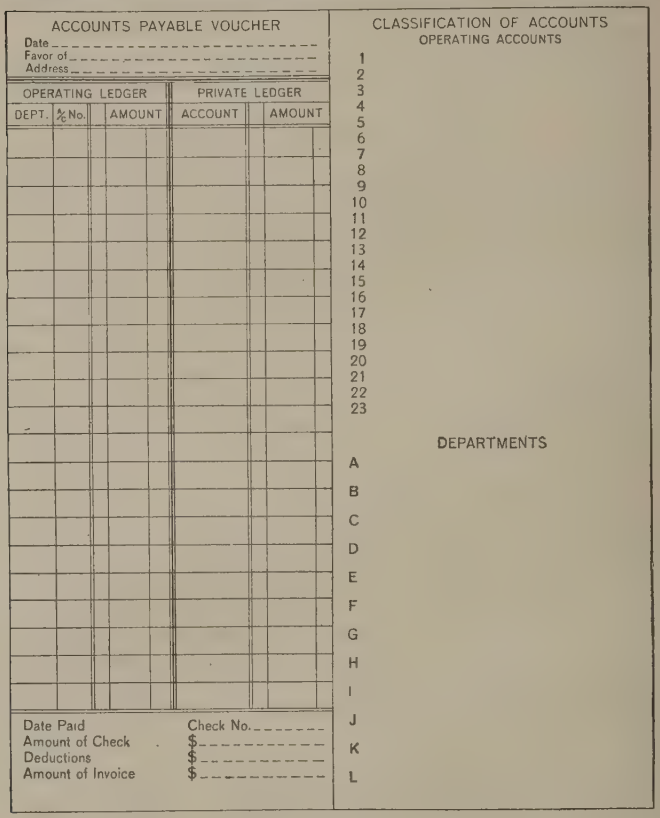


FIG. 20

these expenditures relating to the factory, should be entered in the column headed Private Ledger.

29. Any charges relating to selling expenses or administrative expenses should be entered in this private-ledger column also, in order to facilitate classifying or entering this voucher

in the register of accounts payable. On the other side or section of the voucher is shown a standard classification of accounts that should be printed on the voucher, together with the account number. Immediately under these accounts appear the departments, which have a letter instead of a number for reference, in order to save writing the names. In making the entries, therefore, as to distribution on the back of this voucher in the column headed Operating Ledger, only the letter designating the department and the number of the account should appear, together with the amount. This is intended to save work and also to use the same names for accounts relating to all departments in which the same kind of expenditures are involved. In other words, any of these accounts can be charged to any of the departments; but not all these accounts would be kept, nor would they affect all departments, as, for instance, legal expenses could not possibly affect the storeroom or any of the other manufacturing departments, unless in the case of patents or some unusual circumstances.

30. Additional Forms.—The following additional forms, all of which have been previously explained and illustrated, would be used in connection with this product system: Register of accounts payable, inventory of material, credit certificate, statement of profit and loss, and balance sheet.

PROCESS OR MACHINE-COST METHOD

31. An endeavor has been made in connection with the three preceding systems, as well as the one about to be described, to state the two general principles of cost finding and the two general conditions of manufacture in which these two general principles may be applied.

In the first two systems, one of the conditions in manufacturing was described, namely, the special-order plan, which, as has been stated, means where costs are collated or charged to order numbers of either a customer or for goods to be carried in stock.

In the first system, the principle of the productive-labor method was used, and in the second system the process or machine-cost method was used for the purpose of gathering and compiling the cost data.

32. The third system, namely, the product system, means a condition in manufacture in which it is difficult to carry costs on the article or on a particular production order or customers' order from the time the product starts in the first process of manufacture. This condition, therefore, means that the costs would have to be collated on the product, irrespective of order numbers. It does not mean that an order number cannot be given to start the product in operation, but it does mean that, in many cases, the costs on this particular order number could not possibly be collated from the start to the finish of the product.

The third system illustrated the productive-labor method, as used in a product system, and the system now to be described will illustrate the process or machine-cost method as applied to the condition in manufacture outlined in the third system.

33. The principle, as applied to the gathering of the cost data in this system, is the same as the principle applied in the second system; but the forms incident to determining the cost of the article, so far as the factory forms are concerned, are not the same.

The difference in the number or design of the forms is caused by the difference in the method of operating, and the condition causing these differences in design should be kept in mind in devising a system. The small and particular details incident to any particular business, such as special columns, technical headings, and names of the forms, constitute a secondary consideration in designing a system. The object or principle involved, as well as the kind of information to be obtained, and the manner of obtaining it so far as it relates to the basic principles underlying the system, are the main features to be considered.

34. In this instance it is assumed that a standard line of product is manufactured, and that the operations are well

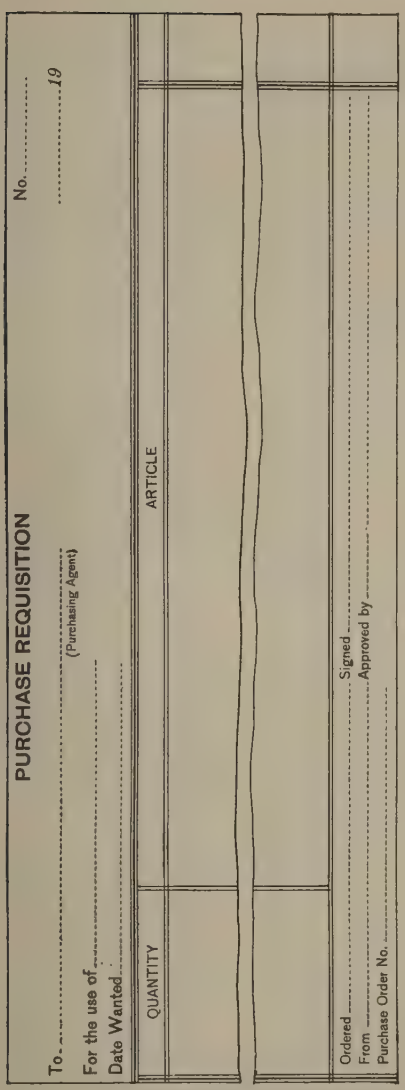


FIG. 21

defined and their relation to the product manufactured definite. The principle involved necessitates a method of obtaining the expenditures or costs chargeable to each operation or machine, as well as the operating hours of each. With this information, the cost of operation per hour can be ascertained. The length of time consumed in the manufacture of each article produced in each of these operations should next be determined. This time may be multiplied by the cost per hour shown, which will then show the cost. The operating hours, together with the cost relating to the machine or process, form the basis of this plan. In a system of this kind, the basis need not

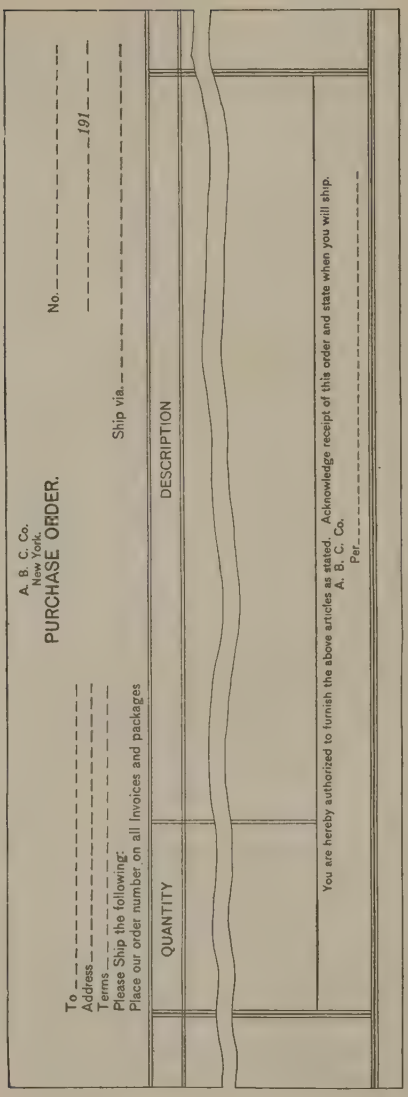


FIG. 22

necessarily be time, as in some instances this is not practical. As an illustration, the total number of pounds, tons, or any other unit of measure may be used, and the cost per pound or per ton for each operation ascertained. This rate is charged to the articles produced by multiplying the total pounds or tons of each by the cost per pound, per ton, etc. Therefore, the basis of a system of this kind may be either time, showing the cost per hour, or quantity, showing the cost of any unit of measure. This applies either to time consumed in the manufacture of an article, regardless of quantity, as a basis; or according to the total unit of measure produced in connection with the cost per unit of measure, regardless of the time consumed. The

result by either method, where the conditions admit of it, will be equally accurate.

35. Purchase Requisition and Purchase Order.—In a product system of this character, use may be made of a pur-

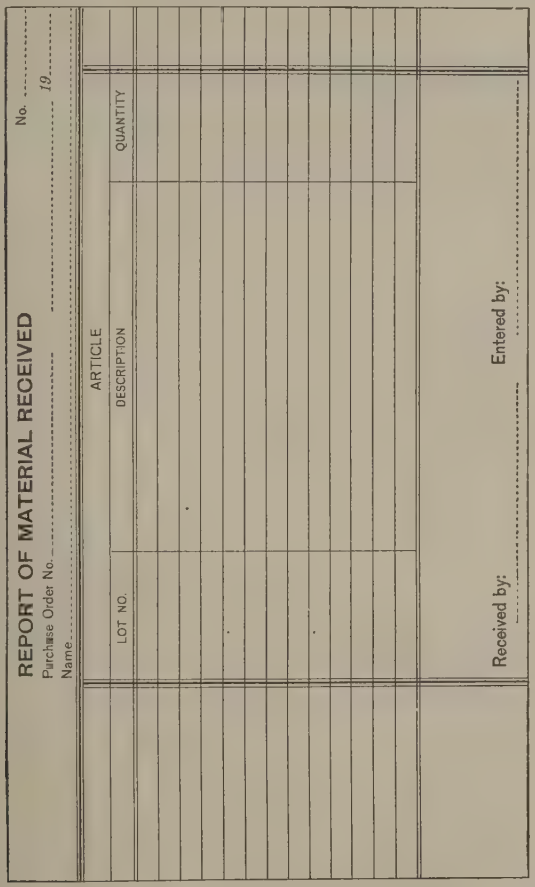


FIG. 23

chase requisition like that shown in Fig. 21 and a purchase order like that shown in Fig. 22.

REPORT OF MATERIAL RECEIVED

No.....

Purchase Order No..... 19....

Name.....

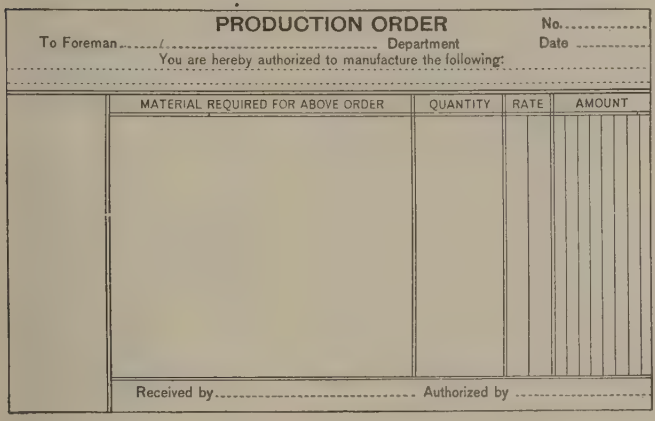
ARTICLE			COST			
LOT NO.	DESCRIPTION	QUANTITY	INVOICE	DISTRIBUTION CHARGES	TOTAL	RATE

CHARGES		OPERATING LEDGER			
DESCRIPTION	AMOUNT	ACCOUNT	COLUMN	FOLIO	AMOUNT

Received by:..... Entered by:.....

FIG. 24

36. Report of Material Received.—The introduction at this time of the report of material received, which is illustrated in Figs. 23 and 24, is merely to serve the purpose of showing forms that may be similar in character but materially different in the compiling of the cost data. A comparison of these two


PRODUCTION ORDER

No.

To Foreman..... Department

Date .....

You are hereby authorized to manufacture the following:

MATERIAL REQUIRED FOR ABOVE ORDER	QUANTITY	RATE	AMOUNT

Received by..... Authorized by .....

FIG. 25

forms with those shown in Figs. 1 and 2 will illustrate this point. The forms shown in Figs. 23 and 24 are more applicable to this particular kind of a system.

37. Raw-Material Stock Card.—A raw-material stock card like that shown in Fig. 3 or one of similar character may be used in this product system if desired.

38. Production Order.—In this instance, no material requisition is used, because the production order, Fig. 25, will furnish a report of material used in the production, and at the same time furnish instructions to the factory concerning the kind of product to be manufactured. All posting to the raw-material records for material used should therefore be made from this record; and the total cost of the material should be charged on the cost sheet in total, against the manufactured

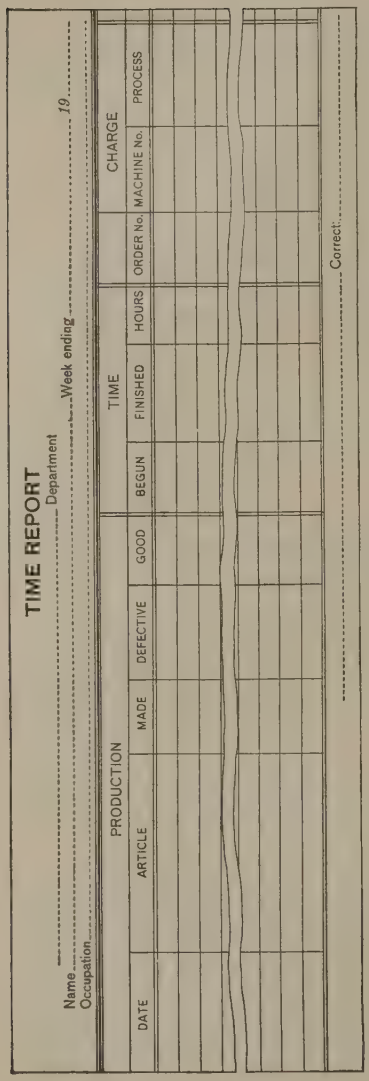


FIG. 26

article for which the material was used. After the raw-material account has been credited and the article charged in the cost record, this form should be filed in a binder and arranged according to the article manufactured from this material.

39. Time Report. A form similar to that shown in Fig. 26 may be used in connection with gathering the data relating to labor costs. These reports may be made out daily or weekly, but the pay-roll form, which follows, is so designed that the posting from the time records may be made daily.

After these reports have been entered in the pay roll, the total time of each employe should be transferred to the analysis of pay roll, which is explained later. In making these transferring entries, only the number of hours and minutes need be entered in the column for the time of each employe,

PAY ROLL

For two weeks ending ..... *19* .....

	DEPARTMENT			AMOUNT OF PAY			DISTRIBUTION											
	NO.	ROOM	CLOCK NO	EARNINGS	DEDUCTIONS	AMOUNT PAYABLE	MON.	TUES.	WED.	THUR.	FRI.	SAT.	MON.	TUES.	WED.	THUR.	FRI.	SAT.

Approved: ..... Correct: .....

FIG. 27

but it must be kept in mind that this time must be entered on the proper analysis of the pay-roll sheet, as a separate sheet is used for each operation and the employe's number or name is entered at the top of this sheet; that is, at the top of the column, of which there are several. If the time reports are kept on a daily basis, this summary should be made from day to day; but if the time is reported weekly, then it should be entered weekly. At any rate, the total time of each employe for the week, charged in each operation, should correspond with the total number of hours entered in the pay-roll book for the same employe and for the same period of time, as the total of this analysis of pay roll for all these operations for the week or month must correspond and balance with the total shown in the pay-roll book.

40. Pay Roll.—As different pay-roll designs have been presented, it is considered necessary in this case simply to mention the fact that the pay-roll book or form, Fig. 27, required in this method is not provided with columns for dividing or distributing labor into direct and indirect, because this information is shown in detail in the analysis of pay roll, next to be explained, according to operation and employe.

41. Analysis of Pay Roll.—A separate sheet of the analysis of pay roll, Fig. 28, should be used for each operation, and the name or the clock number of each employe entered at the top of the several columns running from left to right appearing on this form; that is, only so far as the employes engaged on operations of this kind are concerned. The information relating to time of employes chargeable to this operation is shown in the time reports of each employe, as has already been shown. At the end of the week or the month the total number of hours and minutes in each of these columns provided for each employe connected with these operations should be shown, and his rate per hour entered. The amount should then be extended at the bottom of the sheet, and the total of all these employes, in hours and minutes, and the labor cost relating to the operations for the week or the month should be ascertained and entered in the machine or process-cost records, to be mentioned later.

ANALYSIS OF PAY ROLL

Operation ..... Month of ..... 19 .....

DATE		CLOCK NO.		CLOCK NO.		CLOCK NO.		CLOCK NO.		CLOCK NO		TOTAL	
		HOURS	MINUTES	HOURS	MINUTES	HOURS	MINUTES	HOURS	MINUTES	HOURS	MINUTES	HOURS	MINUTES
TOTAL													
RATE													
AMOUNT													

FIG. 28

The total labor cost of all these operations added together, plus the indirect labor, should equal the total amount of the labor shown in the pay-roll book for the same period. This form is not used for any other purposes, and, after this information has been obtained, the object has been accomplished. The form should be filed in a binder according to operations and arranged according to date.

42. Production Report.—A production report similar to that shown in Fig. 10 will answer the requirements of this system. It is used for obtaining the total production of the

STOCK CARD

FINISHED PRODUCT

Classification No._____

Maximum_____

Article_____ Minimum_____

DATE		PRODUCTION			SHIPMENTS			BALANCE		
		QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT	QUANTITY	RATE	AMOUNT

FIG. 29

various articles manufactured during the month, in the several operations, including the finished product. A separate report should be made out for each operation, although in the system in which this form was first used it was necessary to report only the finished product.

The total production of each article for each operation, according to this system, should be transferred at the end of the month to the cost sheet, according to the article produced, and entered in the proper columns, showing the production according to operation. Where the finished product is shown in the report, it should be entered as a deduction in the cost sheet

just mentioned. The total cost, as well as the rate entered in this report, should then be transferred, so far as finished product is concerned, to the finished-stock records, and entered in the column headed Production; the balance should be shown in the stock sheet increased to this amount.

PROCESS COST RECORD

No.....

..... Department-For the .....

Machine No..... ..... Operation .....

DISTRIBUTION							
Time							
Begun							
Finished							
Hours							
Idle							
Machine Costs							
Day Work							
Piece Work							
Supplies							
Power							
Floor Space							
Maintenance							
License							
Depreciation							
Insurance							
Indirect Expenses							
TOTAL							
Cost per hour							

FIG. 30

43. Finished-Product Stock Record.—A form of the same character as that shown in Fig. 11 may be used in this system, provided it is desired to have all the particulars, as illustrated, on it. Should this form be used, it would be unnecessary to use a cost register in addition. However, a form of the same character as that shown in Fig. 29 may be used, and a separate register for the other information provided if desired.

44. Machine and Process-Cost Record and Power Cost and Distribution.—The two forms for the machine and process-cost record and the power cost and distribution to be used in this system are shown in Figs. 30 and 31. They are explained in the second system, and this explanation may be applied in this system to fit the requirements. The

POWER COSTS AND DISTRIBUTION

For the month of ..... 19 .....

ANALYSIS	COST	DISTRIBUTION	DEPT.	HORSE-POWER	RUN-NING TIME	H. P. HOURS	POWER COST
Rental Charge		Machine No. 1	A				
Depreciation		Machine No. 2	A				
License		Machine No. 3	A				
Inspection		Machine No. 4	B				
Insurance		Etc.	C				
Fuel			etc.				
Water							
Repairs							
Oil, Waste, etc.							
Engineer							
Firemen							
Incidentals							
TOTAL							
Horsepower Hours							
Horsepower Distributed							
Horsepower Developed							
Horsepower Loss and Transmission							
Cost per Horsepower Hour							

FIG. 31

labor cost and the number of hours, however, are taken from the analysis of pay roll described in this system, instead of directly from the time reports, as in the other system.

45. Cost Record.—A cost record such as is shown in Fig. 32 may be designed, generally speaking, in two ways: (1) By keeping a separate sheet for each article, and entering

COST SHEET

No.....

Article .....

DATE		DESCRIPTION		NO. 1			NO. 2			NO. 3			NO. 4			NO. 5		
				HR	MIN	QUANTITY	HR.	MIN	QUANTITY	HR	MIN	QUANTITY	HR.	MIN.	QUANTITY	HR.	MIN	QUANTITY

Total for month
Process Rate per Hour
Process Cost
Material Cost
Total Cost
In Process–first of month
Total .....
In Process–end of month .....
Finished Product
Average Cost per unit

FIG. 32

the descriptive matter as to time, production, cost, etc. on the side of the form reading down, and the operations at the top of the sheet reading from left to right, as is shown in this form; or (2) the conditions may be reversed; the reading matter, as well as the ruling of the design, may be arranged differently and several articles entered on one sheet.

46. All necessary information, so far as time is concerned, can be obtained from a summary of the time reports, according to article and by operation; and the result may be entered in this record and charged to the proper article according to opera-

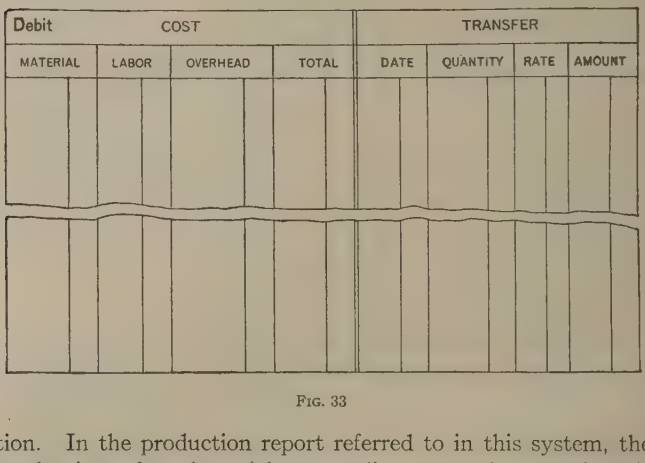


FIG. 33

tion. In the production report referred to in this system, the production of each article, according to each operation, is shown, and it should be entered in the same manner as the time. These two factors being obtained, the rate per hour shown in the machine or process-cost records should then be entered and the amount extended, chargeable to the article for each operation, based on the time consumed in each operation. This will then give the total process cost of the several operations, to which should be added the material cost, which will then show the total cost of the articles produced during the month according to operation. To this should be added the balance or inventory of goods in process of manufacture at the

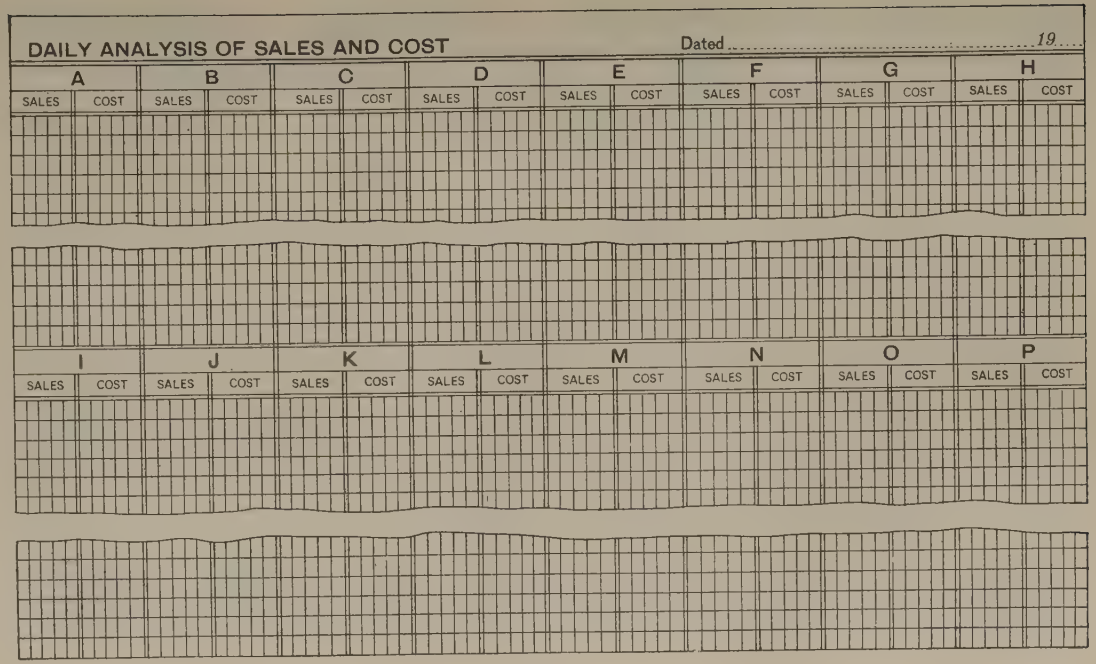

DAILY ANALYSIS OF SALES AND COST
Dated ..... 19 ....
A
B
C
D
E
F
G
H
SALES
COST
I
J
K
L
M
N
O
P

FIG. 34

beginning of the month, from which should be deducted the cost of the articles that have been finished and transferred to the finished-stock records; the sheet will then show the inventory of goods in process of manufacture at the end of the month.

47. If desired, the production and the cost of each operation may be transferred from one operation to the other until the last operation of finished product has been determined. This involves deducting from each of these operations the cost and the quantity transferred from operation No. 1 to operation No. 2, etc., which means that the amount by which operation No. 1 would be decreased, would, at the same time, increase both the quantity and the cost of operation No. 2, and so on. As a result, the inventory, in quantity and cost, would appear in each of these operations, together with the accumulated cost; whereas, according to the other method, the quantities would appear, but the accrued cost in each operation after the first would not appear. The unit cost according to the operation of the article would, however, be more clearly shown than in the method just mentioned. In either case, so far as the cost is concerned, the result will be the same, but the second method involves more work than the first.

48. Operating Ledger.—A form similar to that shown in Fig. 14 or in Fig. 33 would answer the requirements of this system. Both of these forms have been explained previously.

49. Billing System.—The billing system shown in Figs. 15, 16, and 17 are suitable for this system.

50. Daily Analysis of Sales and Costs.—If a number of departments are kept and the sales are classified according to these departments, both at the selling price and the cost price, and if it is not necessary to make a regular abstract of the sales showing to whom sold, sales-sheet number, the amount of the sale, etc., a general summary sheet like that shown in Fig. 34 will be better adapted to these conditions than any other kind of form, provided the sales are particularly active.

51. Additional Forms.—Additional forms could be used in this product system if desired.

COST ACCOUNTING
(PART 9)

PROBLEMS IN COST ACCOUNTING

1. To illustrate the principles that have been explained in the preceding Sections, four problems will now be given.

Each problem is first stated and the conditions are explained; then a complete solution is given, which includes all the entries and the special forms properly filled out, as would be required in actual practice.

PROBLEM 1—CONTROLLING COST RECORDS THROUGH LEDGER ACCOUNTS

2. This problem shows a method of controlling the detailed cost records through accounts in the Operating Ledger. The forms of the different records used have been explained and described in *Cost Accounting*, Part 4, in the Articles or illustrations referred to.

STATEMENT OF THE PROBLEM

3. The cost records of the General Manufacturing Company are kept at the factory office, the general and financial records being kept at the main office.

On September 1, 192—, the Operating Ledger (see Part 4, Arts. **23–32**) showed the following facts:

Cash balance, $500.00; Raw Material and Supplies, $18,545.60; Unpaid Wages of Productive Workers, $2,450.25; Work in Process—Material, $40,375.60; Work in Process—Productive Labor, $12,420.75; Work in Process—Manufacturing Overhead, $5,375.80; Finished Stock, $35,643.70.

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An analysis of the various summary records (see Part 4, Arts. **33–36**) for the month of September, 192—, showed the following:

The invoices for purchases of raw materials and supplies amounted to $6,840.65. (See Part 4, Fig. 15, Entry No. 1.)

The wages paid during the month were $10,423.50, of which $3,470.25 was for non-productive labor. (See Part 4, Fig. 15, Entry No. 2.)

The general office reported the additional factory indirect expenses for the month to be $1,840.60. (See Part 4, Fig. 15, Entry No. 3.)

The Summary of Material Requisitions showing the materials and supplies used amounted to $5,870.95. (See Part 4, Fig. 15, Entry No. 4.)

The productive labor, which was distributed and charged upon detailed cost cards to Work in Process, amounted to $6,540.75. All the indirect expenses incurred during the month were distributed and charged to the Work in Process account. (See Part 4, Fig. 15, Entries Nos. 5 and 6.)

The summary of the production reports showed that the total cost of all finished orders amounted to $10,560.50 for material, $8,840.90 for productive labor, and $6,475.60 for indirect manufacturing expenses. (See Part 4, Fig. 15, Entry No. 7.)

The sales for the month of September were properly costed, that is, the cost of their manufacture was determined and entered on the Register of Sales and Costs, which also showed that the total cost of all shipments was $33,440.80. (See Part 4, Fig. 15, Entry No. 8.)

In the solution of this problem it is proposed to show all the journal entries necessary to record the above given information properly upon the Operating Ledger, and in addition to open all the Operating Ledger accounts, to show the detailed transactions in each account, and to submit a final trial balance on September 30, 192—.

SOLUTION OF PROBLEM 1

4. The entries required by the conditions of Problem 1 are as follows:

GENERAL MANUFACTURING COMPANY

TRIAL BALANCE OF OPERATING LEDGER

SEPTEMBER 1, 192—

		DR.	CR.
(1)	Cash	$ 500 00	
(2)	Raw Material and Supplies	18,545 60	
(3)	Labor		$ 2,450 25
(4)	Work in Process—Material	40,375 60	
(5)	Work in Process—Productive Labor	12,420 75	
(6)	Work in Process—Manufacturing Overhead	5,375 80	
(7)	Finished Stock	35,643 70	
(8)	General Ledger		110,411 20
	Total	$112,861 45	$112,861 45

JOURNAL ENTRIES

SEPTEMBER 30, 192—

(1)	Raw Material and Supplies	$ 6,840.65	
	To General Ledger		$ 6,840.65
	(To record the total amount of purchases received during the month. See Part 4, Fig. 15, Entry No. 1.)		
(2)	Wages	10,423.50	
	To General Ledger		10,423.50
	(To record the total amount of wages paid during the month. See Part 4, Fig. 15, Entry No. 2.)		
(3)	Overhead Expenses	1,840.60	
	To General Ledger		1,840.60
	(To record the total amount of factory indirect expenses reported by the General Office during the month. See Part 4, Fig. 15, Entry No. 3.)		
(4)	Work in Process—Material	5,870.95	
	To Raw Material and Supplies		5,870.95
	(To record material and supplies delivered to operating departments during the month, per Summary of Material Requisitions. See Part 4, Fig. 15, Entry No. 4.)		

JOURNAL ENTRIES—*Continued*

(5)	Work in Process—Productive Labor	$6,540.75	
	Overhead Expenses (non-productive labor)	3,470.25	
	To Wages		$10,011.00
	(To record distribution of labor, productive labor being charged to the operating departments of the plant and the non-productive labor to Overhead Expenses. See Part 4, Fig. 15, Entry No. 5.)		
(6)	Work in Process—Manufacturing Overhead	5,310.85	
	To Overhead Expenses		5,310.85
	(To record distribution of the factory indirect expenses; these are charged to the operating departments. See Part 4, Fig. 15, Entry No. 6.)		
(7)	Finished Stock	25,877.00	
	To Work in Process—Material		10,560.50
	To Work in Process—Productive Labor		8,840.90
	To Work in Process—Manufacturing Overhead		6,475.60
	(To record the production for the month, per the Summary of Production Reports. See Part 4, Fig. 15, Entry No. 7.)		
(8)	General Ledger	33,440.80	
	To Finished Stock		33,440.80
	(To record cost of shipments for the month, per Register of Sales and Costs. See Part 4, Fig. 15, Entry No. 8.)		

GENERAL MANUFACTURING COMPANY

TRIAL BALANCE OF OPERATING LEDGER

SEPTEMBER 30, 192—

	DR.	CR.
Cash	$ 500 00	
Raw Material and Supplies	19,515 30	
Wages		$ 2,037 75
Work in Process—Material	35,686 05	
Work in Process—Productive Labor	10,120 60	
Work in Process—Manufacturing Overhead	4,211 05	
Finished Stock	28,079 90	
General Ledger		96,075 15
Total	$98,112 90	$98,112 90

OPERATING LEDGER

Cash

192—							
Sept.	1	Balance	$ 500 00				

Raw Materials and Supplies

(See Part 4, Art. 25)

192—				192—			
Sept.	1	Balance	$ 18,545 60	Sept.	30	Delivered to work in process	$ 5,870 95
	30	Purchases	6,840 65		30	Balance	19,515 30
			25,386 25				25,386 25
Oct.	1	Balance	19,515 30				

Wages (See Part 4, Art. 26)

192—				192—			
Sept.	30	Payments	$ 10,423 50	Sept.	1	Balance	$ 2,450 25
	30	Balance	2,037 75		30	Work in process—labor	6,540 75
			12,461 25		30	Factory expense—labor	3,470 25
							12,461 25
				Oct.	1	Balance	2,037 75

Overhead Expenses (See Part 4, Art. 27)

192—				192—			
Sept.	30	Purchases, etc.	$ 1,840 60	Sept.	30	Work in process—Manufacturing overhead	$ 5,310 85
	30	Non-productive labor	3,470 25				
			5,310 85				5,310 85

OPERATING LEDGER—*Continued*

WORK IN PROCESS—MATERIAL (See Part 4, Art. 29)

192—				192—			
Sept.	1	Balance	$ 40,375 60	Sept.	30	Production	$ 10,560 50
	30	Raw material and supplies	5,870 95		30	Balance	35,686 05
			46,246 55				46,246 55
Oct.	1	Balance	35,686 05				

WORK IN PROCESS—PRODUCTIVE LABOR (See Part 4, Art. 29)

192—				192—			
Sept	1	Balance	$ 12,420 75	Sept.	30	Production	$ 8,840 90
	30	Productive labor	6,540 75		30	Balance	10,120 60
			18,961 50				18,961 50
Oct.	1	Balance	10,120 60				

WORK IN PROCESS—MANUFACTURING OVERHEAD (See Part 4, Art. 29)

192—				192—			
Sept	1	Balance	$ 5,375 80	Sept.	30	Production	$ 6,475 60
	30	Factory indirect expenses	5,310 85		30	Balance	4,211 05
			10,686 65				10,686 65
Oct.	1	Balance	4,211 05				

FINISHED STOCK (See Part 4, Art. 31)

192—				192—			
Sept.	1	Balance	$ 35,643 70	Sept.	30	Cost of shipments	$ 33,440 80
	30	Production	25,877 00		30	Balance	28,079 90
			61,520 70				61,520 70
Oct.	1	Balance	$ 28,079 90				

GENERAL LEDGER ACCOUNT (See Part 4, Art. 32)

192—				192—			
Sept.	30	Finished stock—cost of sales	$ 33,440 80	Sept.	1	Balance	$ 110,411 20
	30	Balance	96,075 15		30	Raw material and supplies	6,840 65
			129,515 95		30	Wages	10,423 50
					30	Factory indirect expenses	1,840 60
							$ 129,515 95
				Oct.	1	Balance	96,075 15

PROBLEM 2—ESTIMATING COST SYSTEM—FIRST METHOD

5. This problem illustrates a method of verification of estimates on the total amounts of material, labor, and indirect expenses recorded in the manner described in *Cost Accounting*, Part 6, to which special references are made. The plan here described would apply to most lines of business.

STATEMENT OF THE PROBLEM

6. A manufacturing firm is supposed to have the following schedule for estimating the factory costs: (See Part 6, Art. **24.**)

SCHEDULE OF ESTIMATED COSTS

Article	*Material*	*Labor*	*Indirect*	*Total*
A	$1.83	$ .50	$ .50	$ 2.83
B	2.00	.75	.75	3.50
C	2.30	1.01	1.01	4.32
D	2.70	1.25	1.25	5.20
E	3.00	1.50	1.50	6.00
F	4.25	2.00	2.00	8.25
G	5.00	3.00	3.00	11.00

The proof of the estimates is to be on material, labor, and overhead, or indirect, and not on the different classifications of the product. The classifications of the product are handled in total only so far as the ledger accounts are concerned.

The inventory at January 1, 192—, showed the following: (See Part 6, Art. **23.**)

INVENTORY

Quantity	*Article*	*Material*	*Labor*	*Indirect*
500	A	$1.83	$ .50	$ .50
450	B	2.00	.75	.75
400	C	2.30	1.01	1.01
350	D	2.70	1.25	1.25
300	E	3.00	1.50	1.50
250	F	4.25	2.00	2.00

The expenditures for the three months, January 1 to March 31, 192—, were:

Purchases	$28,300.00
Direct labor	12,975.00
Indirect expenses	13,500.00

The sales for the three months ended March 31, 192—, at selling prices were:

Quantity	*Article*	*Selling Price*
3,000	A	$ 3.50
2,500	B	4.50
2,000	C	5.00
1,500	D	6.00
1,000	E	7.00
800	F	9.00
500	G	14.00

The inventory at March 31, 192—, showed that the following merchandise was on hand:

Quantity	*Article*
400	A
600	B
500	C
300	F
200	G

The problem is as follows: To draw the necessary forms to record properly all the information submitted, and to record the transactions on these forms.

To post the original entries as shown by the forms to the various ledger accounts affected.

If the actual inventory at March 31, 192—, does not agree with the balance of material, labor, and overhead, as shown by the book accounts, adjusting entries are to be made so as to bring the book inventory in agreement with the actual inventory.

To prepare the ending trial balance after all accounts are properly adjusted and closed.

SOLUTION OF PROBLEM 2

7. The three special forms in addition to the journal, ledger, and trial balance used in this problem are: The Schedule of Estimated Costs, the Inventory Sheet, and the Analysis of Cost of Sales, all of which in their completed form are shown herewith. These forms were described and explained in Part 6, Arts. **23–25.**

The ledger accounts to be opened are:

Material account.
Labor account.
Indirect expense account.
Sales account.
Balancing account.

8. The Balancing Account is used for the purpose of having the accounts arranged in double-entry form. This account is supposed to represent the controlling account for the other assets and liabilities of the business in this problem.

The Schedule of Estimated Costs is prepared first; next, the Inventory Sheet is made, the estimated rates being used in making the extensions. The totals under each caption, Material, Labor, and Indirect Expense, are debited to these accounts and the aggregate total is credited to the Balancing Account.

The Expenditures January 1 to March 31, 192—, are then debited to their respective accounts by means of a journal entry. See Journal Entry No. 1.

9. The sales for the three months ended March 31, 192—, should be extended and the total, which is $61,950.00, should be credited to the Sales account. See Journal Entry No. 2.

The cost of these sales is now set forth in the Analysis of Cost of Sales, the costs used being those shown by the Schedule of Estimated Costs. The Material, Labor, and Indirect Expense accounts are credited with the amounts they have contributed toward the cost of the sales, as shown by the total under each classification, and the aggregate is debited to the Sales Account.

On the Inventory Sheet and the Analysis of Cost of Sales, the letters *L1, L2,* etc., at the bottoms of certain columns indicate that the amount above is posted to the ledger entry of the number indicated. In a like manner, in the ledger entries, the letters *J, I S,* and *A C S* preceding certain figures indicate that the amount was posted from the Journal, the Inventory Sheet, or the Analysis of Cost of Sales. In the following forms other abbreviations of the names of records are used in a similar manner from time to time.

If the estimated cost records and compilation records were absolutely correct, the balances of the Material, Labor, and Indirect Expense accounts would now agree with the ending inventory figures. Instead, it appears that the estimates have been placed too low and an adjusting entry becomes necessary to bring the book inventory in agreement with the actual inventory. See Journal Entry No. 3.

10. The balance of the Sales account now represents the gross profit which, through Journal Entry No. 4, is closed into the Balancing Account.

NOTE.—The actual ending inventory at March 31, 192—, was valued in accordance with the estimated costs as shown by the Cost Schedule. As these costs were found to be incorrect, the inventory values would have to be adjusted and adjusting entries would have to be made so that the records would show more accurate inventory values. These adjustments would be made after a new Cost Schedule was prepared.

SCHEDULE OF ESTIMATED COSTS

Article	Total	Distribution		
		Material	Labor	Indirect
A	$ 2 83	$ 1 83	$ 50	$ 50
B	3 50	2 00	75	75
C	4 32	2 30	1 01	1 01
D	5 20	2 70	1 25	1 25
E	6 00	3 00	1 50	1 50
F	8 25	4 25	2 00	2 00
G	11 00	5 00	3 00	3 00

(Adapted from Part 6, Fig. 2)

INVENTORY SHEET — JANUARY 1, 192—

Article	Quantity	Total		Distribution					
				Material		Labor		Indirect	
		Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount
A	500	$2.83	$ 1,415 00	$1.83	$ 915 00	$ .50	$ 250 00	$ .50	$ 250 00
B	450	3.50	1,575 00	2.00	900 00	.75	337 50	.75	337 50
C	400	4.32	1,728 00	2.30	920 00	1.01	404 00	1.01	404 00
D	350	5.20	1,820 00	2.70	945 00	1.25	437 50	1.25	437 50
E	300	6.00	1,800 00	3.00	900 00	1.50	450 00	1.50	450 00
F	250	8.25	2,062 50	4.25	1,062 50	2.00	500 00	2.00	500 00
			$10,400 50		$5,642 50		$2,379 00		$2,379 00
			L 1		*L 2*		*L 3*		*L 4*

(Adapted from Part 6, Fig. 1)

ANALYSIS OF COST OF SALES

Article	Quantity Sold	Material		Labor		Indirect		Total	
		Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount
A	3,000	$1.83	$ 5,490 00	$ .50	$ 1,500 00	$ .50	$ 1,500 00	$ 2.83	$ 8,490 00
B	2,500	2.00	5,000 00	.75	1,875 00	.75	1,875 00	3.50	8,750 00
C	2,000	2.30	4,600 00	1.01	2,020 00	1.01	2,020 00	4.32	8,640 00
D	1,500	2.70	4,050 00	1.25	1,875 00	1.25	1,875 00	5.20	7,800 00
E	1,000	3.00	3,000 00	1.50	1,500 00	1.50	1,500 00	6.00	6,000 00
F	800	4.25	3,400 00	2.00	1,600 00	2.00	1,600 00	8.25	6,600 00
G	500	5.00	2,500 00	3.00	1,500 00	3.00	1,500 00	11.00	5,500 00
			$28,040 00		$11,870 00		$11,870 00		$51,780 00
			L 2		*L 3*		*L 4*		*L 5*

(See Fig. 6, Part 3)

INVENTORY SHEET

MARCH 31, 192—

Article	Quantity	Total		Distribution					
				Material		Labor		Indirect	
		Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount
A	400	$ 2.83	$ 1,132 00	$1.83	$ 732 00	$ .50	$ 200 00	$ .50	$ 200 00
B	600	3.50	2,100 00	2.00	1,200 00	.75	450 00	.75	450 00
C	500	4.32	2,160 00	2.30	1,150 00	1.01	505 00	1.01	505 00
F	300	8.25	2,475 00	4.25	1,275 00	2.00	600 00	2.00	600 00
G	200	11.00	2,200 00	5.00	1,000 00	3.00	600 00	3.00	600 00
			$10,067 00		$5,357 00		$2,355 00		$2,355 00

JOURNAL

ENTRY No. 1

Sundries to Balancing Account		$54,775.00
Material	$28,300.00	
Labor	12,975.00	
Indirect Expense	13,500.00	
(Expenditures January 1 to March 31, 192—)		

ENTRY No. 2

Balancing account	$61,950.00	
To sales		61,950.00
(Sales for three months ended March 31, 192—)		
Style A—3,000 $10,500.00		
Style B—2,500 11,250.00		
Style C—2,000 10,000.00		
Style D—1,500 9,000.00		
Style E—1,000 7,000.00		
Style F— 800 7,200.00		
Style G— 500 7,000.00		
$61,950.00		

ENTRY No. 3

Sales to sundries	$ 3,328.50	
Material		$ 545.50
Labor		1,129.00
Indirect Expense		1,654.00
(Adjustment of inventories to bring book balances in agreement with the physical inventory.)		

ENTRY No. 4

Sales	6,841.50	
To Balancing Account		6,841.50
(To close account.)		

LEDGER

Account No. 1 — BALANCING ACCOUNT

192—					192—				
Mar.	31	Sales	J	$ 61,950 00	Jan.	1	Inventory	IS	$10,400 50
	31	Balance		10,067 00	Mar.	31	Expenditures	J	54,775 00
						31	Gross profit	J	6,841 50
				$ 72,017 00					$72,017 00
					Apr.	1	Balance		$10,067 00

Account No. 2 — MATERIAL

192—					192—				
Jan.	1	Inventory	IS	$ 5,642 50	Mar.	31	Cost of sales	ACS	$ 28,040 00
Mar.	31	Purchases	J	28,300 00		31	Adjustment	J	545 50
						31	Balance		5,357 00
				$ 33,942 50					$ 33,942 50
Apr.	1	Balance		$ 5,357 00					

Account No. 3 — LABOR

192—					192—				
Jan.	1	Inventory	IS	$ 2,379 00	Mar.	31	Cost of sales	ACS	$ 11,870 00
Mar.	31	Expenditures	J	12,975 00		31	Adjustment	J	1,129 00
						31	Balance		2,355 00
				$ 15,354 00					$ 15,354 00
Apr.	1	Balance		$ 2,355 00					

LEDGER—*Continued*

Account No. 4 INDIRECT EXPENSE

192—						192—				
Jan.	1	Inventory	*IS*	$ 2,379 00		Mar.	31	Cost of sales	*ACS*	$ 11,870 00
Mar.	31	Expenditures	*J*	13,500 00			31	Adjustment	*J*	1,654 00
				$ 15,879 00			31	Balance		2,355 00
										$ 15,879 00
Mar.	31	Balance		$ 2,355 00						

Account No. 5 SALES

192—						192—				
Mar.	31	Cost of sales	*ACS*	$ 51,780 00		Mar.	31	Sales	*J*	$ 61,950 00
	31	Adjustment of cost of sales	*J*	3,328 50						
	31	Balancing Account	*J*	6,841 50						
				$ 61,950 00						$ 61,950 00

TRIAL BALANCE, MARCH 31, 192—

Balancing Account		$ 10,067 00
Material	$ 5,357 00	
Labor	2,355 00	
Indirect Expenses	2,355 00	
Total	$ 10,067 00	$ 10,067 00

COST ACCOUNTING
(PART 10)

PROBLEMS IN COST ACCOUNTING
(Continued)

PROBLEM 3—ESTIMATING COST SYSTEM—SECOND METHOD

1. This problem illustrates a method of verification of estimates on each class of product according to classification of material used in departments and the departmental labor and indirect expense. A description of the method here used was given in *Cost Accounting,* Part 6, and reference should be made to the Articles indicated in parenthesis. The references, Figs. 1, 2, etc., apply to illustrations in this Section.

In Problem 2 the estimates were based on totals only of material, labor, and indirect expense. This problem illustrates the method used by a concern that desires a further and more detailed classification of costs from an estimating standpoint. All the accounts are contained in one ledger.

STATEMENT OF PROBLEM

2. The complete trial balance of the books as on April 1, 192—, showed the following:

Cash	$12,000.00	
Accounts receivable	20,000.00	
Inventory	10,067.00	
Machinery and tools	25,000.00	
Accounts payable		$ 6,000.00
Capital		61,067.00

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INVENTORY — APRIL 1, 192—

Article	Material		Labor		Indirect	Total
	Dept. 1	Dept. 2	Dept. 1	Dept. 2		
A	$ 300.00	$ 200.00	$ 120.00	$ 80.00	$ 200.00	$ 900.00
B	700.00	200.00	300.00	150.00	450.00	1,800.00
C	500.00	350.00	300.00	205.00	505.00	1,860.00
F	450.00	400.00	375.00	225.00	600.00	2,050.00
G	275.00	175.00	350.00	250.00	600.00	1,650.00
Raw material						1,807.00
Total	$2,225.00	$1,325.00	$1,445.00	$910.00	$2,355.00	$10,067.00

FIG. 1

SCHEDULE OF ESTIMATED COSTS

Article	Material		Labor		Indirect	Total
	Dept. 1	Dept. 2	Dept. 1	Dept. 2		
A	$1.04	$ .86	$ .33	$ .22	$ .61	$ 3.06
B	1.56	.52	.55	.28	.91	3.82
C	1.35	1.04	.66	.45	1.22	4.72
D	2.08	.73	.83	.55	1.52	5.71
E	2.08	1.04	.99	.66	1.82	6.59
F	2.34	2.08	1.38	.83	2.43	9.06
G	3.12	2.08	1.98	1.38	3.64	12.20

FIG. 2

The inventory at April 1, 192—, was classified as shown in Fig. 1. (See Part 6, Art. **29.**)

A schedule of estimated costs was prepared as shown in Fig. 2. (See Part 6, Art. **30.**)

The inventory, under the classification of Article, is intended to cover goods in process of manufacture and finished stock. The raw material is handled separately.

It is proposed to keep accounts in the Ledger and to group the sales according to the following sales classification: Articles A and B to be included in Dept. S-1; articles C, D, and E, in Dept. S-2; and articles F and G, in Dept. S-3, accounts being opened in the Ledger accordingly.

The expenditures for the 9 months were as follows:

Raw material	$59,070.00
Labor—Operating Dept. No. 1	15,637.00
Labor—Operating Dept. No. 2	10,081.00
Indirect Expenses, per schedule accompanying	26,321.00
Selling Expenses, per schedule accompanying	10,250.00

SCHEDULE OF INDIRECT EXPENSES

Labor—indirect	$ 9,125.00
Factory supplies	2,312.50
Light, heat, and power	3,312.50
Supervision—salaries	6,125.00
Freight, express, and cartage—inward	187.50
Depreciation	1,375.00
Maintenance	250.00
Repairs	633.50
Factory rent	2,500.00
Taxes—factory	125.00
Insurance	375.00
Total	$26,321.00

SCHEDULE OF SELLING EXPENSES

Salaries—general	$ 5,750.00
Telephone and telegraph	125.00
Stationery and printing	125.00
Postage	187.50
Legal expense	62.50
Commission	250.00
Traveling expenses	2,500.00
Advertising	1,250.00
Total	$10.250.00

The following items are to be shown in the Purchase Journal (see Part 6, Art. **32**) as they are usually entered in a record of this character:

Raw material
Supplies
Repairs and maintenance
Rent
Taxes
Insurance
Light, heat, and power
Stationery and printing
Advertising
Freight, Express, and Cartage—inward

The total, as shown by the Purchase Journal, should then be posted to a controlling account for accounts payable and the details charged to the classification affected.

The item of depreciation is to be taken care of by means of a journal entry.

All of the other items are to be handled through the cash account, this account being journalized for posting into the ledger. In addition to the cash item mentioned, the collections for accounts receivable amounted to $110,000.00, and payments were made for accounts payable amounting to $65,000.00.

A cash account should be opened in the Ledger beginning with the amount shown on the opening trial balance.

A summary of the bills of material (see Part 2, Art. **18**) for the 9 months ended December 31, 192—, showed the following:

Article	Quantity *Dept. 1*	Quantity *Dept. 2*
A	4,000	4,000
B	3,000	3,000
C	5,000	5,000
D	1,000	1,000
E	2,000	2,000
F	1,500	1,500
G	2,500	2,500

From this schedule the information will be obtained for charging the classifications affected and crediting the material taken out of the raw-material stock.

The sales for the 9 months ended December 31, 192—, were as follows:

Article	Quantity	Rate
A	4,900	$ 3.80
B	3,100	4.60
C	4,950	5.60
D	220	6.30
E	2,010	8.00
F	1,475	10.00
G	2,505	14.00

The actual inventory taken as on December 31 was as follows:

Raw material on hand $6,215.00

Goods in process, as in Fig. 3.

INVENTORY Dec. 31, 192—

Article	Material		Labor		Overhead
	Dept. 1	Dept. 2	Dept. 1	Dept. 2	
A	$ 250.00	$ 175.00	$ 110.00	$ 70.00	$ 198.00
B	550.00	225.00	250.00	100.00	385.00
C	450.00	300.00	225.00	175.00	440.00
D	275.00	175.00	175.00	75.00	275.00
E	125.00	80.00	75.00	35.00	121.00
F	500.00	275.00	210.00	165.00	412.50
G	300.00	165.00	200.00	125.00	357.50
	$2,450.00	$1,395.00	$1,245.00	$745.00	$2,189.00

FIG. 3

The forms required in this problem are as follows:
Inventory Sheet—Part 6, Art. **29,** Fig. 4.
Schedule of Estimated Costs—Part 6, Art. **30,** Fig. 5.
Analysis of Cost of Sales—Part 6, Art. **31,** Fig. 6.
Purchase Journal—Part 6, Art. **32,** Fig. 7.
Bill of Material—Part 2, Art. **17,** Fig. 16.
Pay-Roll Analysis—Part 6, Art. **33,** Fig. 8.
Profit and Loss—Part 5, Art. **36,** Fig. 17.

The forms for the schedule of estimated costs, inventory record, and analysis of cost of sales will be of the same character as the forms used in the previous problem excepting that they will have to be modified and changed to show the details as required by this problem.

The Purchase Journal will be modified and changed to meet the requirements in this problem.

The Bill of Material used will be changed to cover both operating departments on one sheet.

After the books have been closed a Balance Sheet will be drawn up. (See Part 6, Art. **38,** Fig. 19.)

All forms used will be shown properly filled out.

SOLUTION OF PROBLEM 3

3. In the following pages is shown the complete solution of Problem 3. The different forms used are shown complete in Figs. 4 to 9, inclusive, and, in parentheses under each, reference is made to the Part and Article where the form was first described and explained. It should be noticed that in some cases the form as here used is not an exact duplicate of the one first shown, but has been adapted to meet the conditions of this problem. All the journal entries, as well as the ledger entries, are also given.

4. Explanations.—The following explanations of the journal entries and forms are given in the order postings are to be made, all journal entries having been numbered for convenience in referring to them.

Journal Entry No. 1: This is the opening entry and places upon the books the Assets and Liabilities of the firm as of April 1, 192—.

Inventory Sheet: The Inventory Sheet, Fig. 5, gives the detail for the item $10,067.00 in the opening entry. Postings are made to the Overhead, Raw Material, and Department accounts and the total is credited to the Inventory account.

Journal Entry No. 2: This entry is made for the purpose of recording the cash received from customers. Information of this character would as a rule be obtained from the Cash Book.

Journal Entry No. 3: In this entry the sundry accounts are charged and Cash credited in aggregate with the disbursements which in business would be posted from the credit side of a Cash Book from day to day or at the end of each month when special columns are used. The detail for the Labor and Salaries is first made up on the Pay-Roll form, Fig. 8, and a check drawn for the total amount. This is charged to the accounts affected directly from the cash book as shown, no postings in this case being made from the Pay-Roll form. It would be quite proper, however, to charge the full amount of the Pay-Roll check to a Pay-Roll account. In this instance postings would be made from the Pay-Roll form to the Debit of the Labor and Salary accounts and the total credited to the Pay-Roll account, thus balancing it.

Journal Entry No. 4: The reserve created through this entry can be shown on balance sheet under the liabilities or handled as a deduction from the asset value of the Machinery and Tools.

Purchase Journal: In the Purchase Journal, Fig. 6, the figures shown indicate the total invoices for goods purchased and expenses incurred under the different captions. In actual practice the detailed entries would show the transactions with each creditor, the totals of the various columns being obtained at the end of the month.

Summary of Bills of Material: The Summary of Bills of Material, Fig. 7, represents the total amount of goods manufactured during the period under all classifications as called for on Factory (or Production) Orders. (See Part 2, Art. **14,** Figs. 12, 13, and 14.) The rates in the Estimated Cost Schedule are used for estimating the material used. The total is credited to Raw Material account and the departments are charged with their respective portions according to the schedule.

Sales and Cost of Sales: The Register of Sales was described in Part 5, Art. **30,** and Analysis of Cost of Sales in Part 6, Art. **31.** The schedule, shown in Fig. 9, is made from the sales book, all invoices being analyzed. The total sales are debited to Accounts Receivable and each sales classification is credited with its respective sales. The Classified Sales accounts

are then debited with the cost of sales, and the Material, Labor, and Overhead accounts are credited with the amount contributed by each, at the Estimated Cost Schedule rates.

Journal Entry No. 5: Just as the Department Material accounts are charged with the material used and the Department Labor accounts with the cost of labor, the Overhead account is now debited with all indirect expense items and the latter detailed accounts are balanced.

Journal Entry No. 6: This entry is made so as to facilitate the charging of each Department Sales account with the respective percentage of the total selling expenses.

Journal Entry No. 7: It will be seen that the cost of sales of each sales department bears the following relation to the total cost of sales:

Dept. S-1	24.7%
Dept. S-2	34.9%
Dept. S-3	40.4%
Total	100.0%

The distribution of the Selling Expenses is made on this basis.

Journal Entry No. 8: The balance of each Department Sales account now represents the net profit of that department. Through this entry they are brought into the Profit and Loss account.

Journal Entry No. 9: If the Schedule of Estimated Costs were absolutely correct, the balances of the Raw Material account, Department Material accounts, Department Labor accounts, and Overhead account would correspond exactly with the inventory as on December 31, 192—. This, however, is not the condition in this problem, and the adjusting entry becomes necessary to bring these accounts into agreement with the physical inventory. The net difference represents either a profit or a loss and is credited or debited to the Profit and Loss account as the case may be. At the end of the period the differences above mentioned, if too great, indicate that the schedule requires revision. In this entry it will be noted that all the adjustments may be termed reasonable with the exception of the Overhead. This rate proved too high and, in preparing

the Schedule of Estimated Costs for the following period, attention should be given to the changing of this element of cost.

NOTE.—The actual ending inventory at December 31, 192—, was valued in accordance with the estimated costs as shown by the Cost Schedule. As these costs were found to be incorrect, the inventory values would have to be adjusted, and adjusting entries would have to be made so that the records would show more accurate inventory values. These adjustments would be made after a new cost schedule was prepared.

SCHEDULE OF ESTIMATED COSTS

Article	Material		Labor		Indirect	Total
	Dept. 1	Dept. 2	Dept. 1	Dept. 2		
A	$1 04	$ 86	$ 33	$ 22	$ 61	$ 3 06
B	1 56	52	55	28	91	3 82
C	1 35	1 04	66	45	1 22	4 72
D	2 08	73	83	55	1 52	5 71
E	2 08	1 04	99	66	1 82	6 59
F	2 34	2 08	1 38	83	2 43	9 06
G	3 12	2 08	1 98	1 38	3 64	12 20

(Form described in Part 6, Art. **30**)

FIG. 4

JOURNAL

April 1, 192—

Entry No. 1					
			Sundries to sundries:		
$ 12,000	00	*L 6*	Cash		
20,000	00	*L 2*	Accounts receivable		
10,067	00	*L 31*	Inventory		
25,000	00	*L 4*	Machinery and tools		
			Accounts payable	*L 3*	$ 6,000 00
			Capital	*L 1*	61,067 00
			(To open accounts. Per trial balance as on this date)		
Entry No. 2					
$110,000	00	*L 6*	Cash		
			To Accounts receivable	*L 2*	$110,000 00
			(Cash receipts for 9 months ending December 31, 192—)		
Entry No. 3					
			Sundries to Cash	*L 6*	$114,843 00
$ 65,000	00	*L 3*	Accounts payable		
15,637	00	*L 10*	Department 1—Labor		
10,081	00	*L 11*	Department 2—Labor		
9,125	00	*L 20*	Indirect labor		
6,125	00	*L 21*	Salary—Supervision		
5,750	00	*L 27*	Salary—General		
125	00	*L 28*	Telephone and telegraph		
187	50	*L 29*	Postage		
62	50	*L 30*	Legal expense		
250	00	*L 23*	Commission		
2,500	00	*L 24*	Traveling expense		
			(Cash distribution for 9 months ending December 31, 192—)		

JOURNAL—(*Continued*)

Entry No. 4					
$ 1,375	00	*L 22*	Depreciation		
			To Reserve for depreciation	*L 5*	$ 1,375 00
			(For 9 months ending December 31, 192—.)		
Entry No. 5					
$ 26,321	00	*L 12*	Overhead		
			To sundries:		
			Factory supplies	*L 13*	$ 2,312 50
			Repairs and maintenance	*L 14*	883 50
			Freight, express, and cartage—inward	*L 15*	187 50
			Rent	*L 16*	2,500 00
			Taxes	*L 17*	125 00
			Insurance	*L 18*	375 00
			Light, heat, and power	*L 19*	3,312 50
			Indirect labor	*L 20*	9,125 00
			Salaries—Supervision	*L 21*	6,125 00
			Depreciation	*L 22*	1,375 00
Entry No. 6					
$ 10,250	00	*L 35*	Selling expenses to sundries:		
			Commission	*L 23*	$ 250 00
			Traveling expense	*L 24*	2,500 00
			Stationery and printing	*L 25*	125 00
			Salaries—General	*L 27*	5,750 00
			Telephone and telegraph	*L 28*	125 00
			Postage	*L 29*	187 50
			Legal expense	*L 30*	62 50
			Advertising	*L 26*	1,250 00

JOURNAL—*Continued*

Entry No. 7					
			Sundries to Selling expense	*L 35*	$ 10,250 00
$ 2,531 75		*L 32*	Department S-1 (24.7%)		
3,577 25		*L 33*	Department S-2 (34.9%)		
4,141 00		*L 34*	Department S-3 (40.4%)		
			(Distribution of selling expenses on a basis of material, labor, and indirect charges.)		
Entry No. 8					
			Sundries to Profit and loss	*C 36*	$ 9,009 40
$ 3,512 25		*L 32*	Department S-1		
3,742 65		*L 33*	Department S-2		
1,754 50		*L 34*	Department S-3		
			(Net profit of each department per balances of department sales accounts.)		
Entry No. 9					
			Sundries to sundries.		
$ 243	40	*L 9*	Department 2—Material		
56	25	*L 11*	Department 2—Labor		
2,057	05	*L 12*	Overhead		
			Raw material	*L 7*	$ 192 00
			Department 1—Material	*L 8*	395 00
			Department 1—Labor	*L 10*	80 10
			Profit and loss account	*L 36*	1,689 60
			(Adjustment of inventories to bring book balances in agreement with physical inventory.)		

INVENTORY SHEET April 1, 192—

Article	Material				Labor				Indirect		Total	
	Dept. 1		Dept. 2		Dept. 1		Dept. 2					
	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount
A		$ 300 00		$ 200 00		$ 120 00		$ 80 00		$ 200 00		$ 900 00
B		700 00		200 00		300 00		150 00		450 00		1,800 00
C		500 00		350 00		300 00		205 00		505 00		1,860 00
F		450 00		400 00		375 00		225 00		600 00		2,050 00
G		275 00		175 00		350 00		250 00		600 00		1,650 00
Raw material											*L 7*	1,807 00
		$ 2,225 00		$ 1,325 00		$1,445 00		$910 00		$2,355 00		$ 10,067 00
		L 8		*L 9*		*L 10*		*L 11*		*L 12*		*L 31*

(Part 6, Art. **29**, Fig. 4, modified to meet requirements of the problem)

FIG. 5

PURCHASE JOURNAL

Date	Name of Creditor	Folio	Total	Raw Material	Supplies	Repairs and Maintenance	Rent	Taxes	Insurance	Sundry Accounts		
										Name	Folio	Amount
192—												
Dec. 31			$59,070 00	$59,070 00								
			2,312 50		$2,312 50							
			250 00			$250 00						
			633 50			633 50						
			2,500 00				$2,500 00					
			125 00					$125 00				
			375 00						$375 00			
			3,312 50							Light, heat, and power	*L 19*	$3,312 50
			125 00							Stationery and printing	*L 25*	125 00
			1,250 00							Advertising	*L 26*	1,250 00
			187 50							Freight, express, and cartage—inward	*L 15*	187 50
			$70,141 00	$59,070 00	$2,312 50	$883 50	$2,500 00	$125 00	$375 00			$4,875 00
			L 3	*L 7*	*L 13*	*L 14*	*L 16*	*L 17*	*L 18*			

(Part 6, Art. **32**, Fig. 7, modified to meet requirements of the problem)

FIG. 6

SUMMARY OF BILLS OF MATERIAL

Article	Quantity	Material				Total	
		Dept. 1		Dept. 2			
		Rate	Amount	Rate	Amount	Rate	Amount
A	4,000	$1.04	$ 4,160 00	$ .86	$ 3,440 00	$1.90	$ 7,600 00
B	3,000	1.56	4,680 00	.52	1,560 00	2.08	6,240 00
C	5,000	1.35	6,750 00	1.04	5,200 00	2.39	11,950 00
D	1,000	2.08	2,080 00	.73	730 00	2.81	2,810 00
E	2,000	2.08	4,160 00	1.04	2,080 00	3.12	6,240 00
F	1,500	2.34	3,510 00	2.08	3,120 00	4.42	6,630 00
G	2,500	3.12	7,800 00	2.08	5,200 00	5.20	13,000 00
			$ 33,140 00		$ 21,330 00		$ 54,470 00
			L 8		*L 9*		*L 7*

(Part 2, Art. **18**, Fig. 16, modified to meet requirements of the problem)

FIG. 7

PAY ROLL

FOR THE PERIOD ENDING DECEMBER 31, 192—

No.	Name	Amount	Operating Department No. 1	Operating Department No. 2	Indirect Labor	Supervision	Office Salary
	Labor—Department 1	$15,637 00	$15,637 00				
	Labor—Department 2	10,081 00		$10,081 00			
	Indirect labor	9,125 00			$ 9,125 00		
	Supervision	6,125 00				$ 6,125 00	
	Salaries—General	5,750 00					$ 5,750 00
		$46,718 00	$15,637 00	$10,081 00	$ 9,125 00	$ 6,125 00	$ 5,750 00

(Part 6, Art. **33**, Fig. 8, arranged for two operating departments)

FIG. 8

ANALYSIS OF SALES AND COST OF SALES

Article	Number Sold	Rate	Sales: Total Sales Amount	Cost of Sales: Material, Department 1, Rate	Material, Department 1, Amount	Material, Department 2, Rate	Material, Department 2, Amount	Labor, Department 1, Rate	Labor, Department 1, Amount	Labor, Department 2, Rate	Labor, Department 2, Amount	Indirect, Rate	Indirect, Amount	Total, Rate	Total, Amount
1 (A)	4,900	$ 3.80	$ 18,620 00	$1.04	$ 5,096 00	$ .86	$ 4,214 00	$ .33	$ 1,617 00	$ .22	$ 1,078 00	$ .61	$ 2,989 00	$ 3.06	$ 14,994 00
(B)	3,100	4.60	14,260 00	1.56	4,836 00	.52	1,612 00	.55	1,705 00	.28	868 00	.91	2,821 00	3.82	11,842 00
2 (C)	4,950	5.60	27,720 00	1.35	6,682 50	1.04	5,148 00	.66	3,267 00	.45	2,227 50	1.22	6,039 00	4.72	23,364 00
(D)	220	6.30	1,386 00	2.08	457 60	.73	160 60	.83	182 60	.55	121 00	1.52	334 40	5.71	1,256 20
(E)	2,010	8.00	16,080 00	2.08	4,180 80	1.04	2,090 40	.99	1,989 90	.66	1,326 60	1.82	3,658 20	6.59	13,245 90
3 (F)	1,475	10.00	14,750 00	2.34	3,451 50	2.08	3,068 00	1.38	2,035 50	.83	1,224 25	2.43	3,584 25	9.06	13,363 50
(G)	2,505	14.00	35,070 00	3.12	7,815 60	2.08	5,210 40	1.98	4,959 90	1.38	3,456 90	3.64	9,118 20	12.20	30,561 00
			$127,886 00		$32,520 00		$21,503 40		$15,756 90		$10,302 25		$28,544 05		$108,626 60
Sales Account 1 (A, B), *L 32*			$ 32,880 00		$ 9,932 00		$ 5,826 00		$ 3,322 00		$ 1,946 00		$ 5,810 00	*L 32*	$ 26,836 00
Sales Account 2 (C, D, E), *L 33*			45,186 00		11,320 90		7,399 00		5,439 50		3,675 10		10,031 60	*L 33*	37,866 10
Sales Account 3 (F, G), *L 34*			49,820 00		11,267 10		8,278 40		6,995 40		4,681 15		12,702 45	*L 34*	43,924 50
			$127,886 00		$32,520 00		$21,503 40		$15,756 90		$10,302 25		$28,544 05		$108,626 60
			L 2		*L 8*		*L 9*		*L 10*		*L 11*		*L 12*		

(Part 6, Art. **31**, Fig. 6, modified to meet requirements of the problem)

FIG. 9

LEDGER

Account No. 1

Capital

						192—			
						Apr.	1	Balance	J

Account No. 4

MACHINERY AND TOOLS

192—						192—					
Apr.	1	Balance	J	$ 25,000	00						

Account No. 5

RESERVE FOR DEPRECIATION

						192—					
						Dec.	31	Depreciation	J	$ 1,375	00

Account No. 6

CASH

192—						192—					
Apr.	1	Balance	J	$ 12,000	00	Dec.	31	Sundries	J	$ 114,843	00
Dec.	31	Accounts receivable	J	110,000	00		31	Balance		7,157	00
				$ 122,000	00					$ 122,000	00
192—											
Jan.	1	Balance		$ 7,157	00						

Account No. 7

RAW MATERIAL

192—					192—				
Apr.	1	Inventory	*I S*	$ 1,807 00	Dec.	31	Bills of material	*B M*	$ 54,470 00
Dec.	31	Accounts payable	*P J*	59,070 00		31	Adjustment of inventory	*J*	192 00
						31	Balance		6,215 00
				$ 60,877 00					$ 60,877 00
192—									
Jan.	1	Balance		$ 6,215 00					

Account No. 8

DEPARTMENT 1—MATERIAL IN PROCESS

192—					192—				
Apr.	1	Inventory	*I S*	$ 2,225 00	Dec.	31	Cost of sales	*C of S*	$ 32,520 00
Dec.	31	Bills of material	*B M*	33,140 00		31	Adjustment of inventory	*J*	395 00
						31	Balance		2,450 00
				$ 35,365 00					$ 35,365 00
192—									
Jan.	1	Balance		$ 2,450 00					

Account No. 9

DEPARTMENT 2—MATERIAL IN PROCESS

192—					192—				
Apr.	1	Inventory	*I S*	$ 1,325 00	Dec.	31	Cost of sales	*C of S*	$ 21,503 40
Dec.	31	Bills of material	*B M*	21,330 00		31	Balance		1,395 00
	31	Adjustment of inventory	*J*	243 40					
				$ 22,898 40					$ 22,898 40
192—									
Jan.	1	Balance		$ 1,395 00					

Account No. 10

DEPARTMENT 1—LABOR IN PROCESS

192—						192—					
Apr.	1	Inventory	*I S*	$ 1,445	00	Dec.	31	Cost of sales	*C of S*	$ 15,756	90
Dec.	31	Cash	*J*	15,637	00		31	Adjustment of inventory	*J*	80	10
				$ 17,082	00		31	Balance		1,245	00
										$ 17,082	00
192—											
Jan.	1	Balance		$ 1,245	00						

Account No. 11

DEPARTMENT 2—LABOR IN PROCESS

192—						192—					
Apr.	1	Inventory	*I S*	$ 910	00	Dec.	31	Cost of sales	*C of S*	$ 10,302	25
Dec.	31	Cash	*J*	10,081	00		31	Balance		745	00
	31	Adjustment of inventory	*J*	56	25						
				$ 11,047	25					$ 11,047	25
192—											
Jan.	1	Balance		$ 745	00						

Account No. 12

OVERHEAD IN PROCESS

192—					192—				
Apr.	1	Inventory	*I S*	$ 2,355 00	Dec.	31	Cost of sales	*C of S*	$ 28,544 05
Dec.	31	Indirect expenses	*J*	26,321 00		31	Balance		2,189 00
	31	Adjustment of inventory	*J*	2,057 05					$ 30,733 05
				$ 30,733 05					
192—									
Jan.	1	Balance		$ 2,189 00					

Account No. 13

FACTORY SUPPLIES

192—					192—				
Dec.	31	Accounts payable	*P J*	$ 2,312 50	Dec.	31	Overhead	*J*	$ 2,312 50

Account No. 14

REPAIRS AND MAINTENANCE

192— Dec.	31	Accounts payable	*P J*	$	883	50	192— Dec.		Overhead	*J*	$ 883 50

Account No. 15

FREIGHT, EXPRESS, AND CARTAGE—INWARD

192— Dec.	31	Accounts payable	*P J*	$	187	50	192— Dec.	31	Overhead	*J*	$ 187 50

Account No. 16

RENT

192— Dec.	31	Accounts payable	*P J*	$	2,500	00	192— Dec.	31	Overhead	*J*	$ 2,500 00

Account No. 17

TAXES

192— Dec.	31	Accounts payable	*P J*	$	125	00	192— Dec.	31	Overhead	*J*	$ 125 00

Account No. 18

INSURANCE

192— Dec.	31	Accounts payable	*P J*	$	375	00	192— Dec.	31	Overhead	*J*	$ 375 00

Account No. 19

LIGHT, HEAT, AND POWER

192—					192—				
Dec.	31	Accounts payable	P J	$ 3,312 50	Dec.	31	Overhead	J	$ 3,312 50

Account No. 20

INDIRECT LABOR

192—					192—				
Dec.	31	Cash	J	$ 9,125 00	Dec.	31	Overhead	J	$ 9,125 00

Account No. 21

SALARIES—SUPERVISION

192—					192—				
Dec.	31	Cash	J	$ 6,125 00	Dec.	31	Overhead	J	$ 6,125 00

Account No. 22

DEPRECIATION

192—					192—				
Dec.	31	Reserve	J	$ 1,375 00	Dec.	31	Overhead	J	$ 1,375 00

Account No. 23

COMMISSION

192—					192—				
Dec.	31	Cash	J	$ 250 00	Dec.	31	Selling expense	J	$ 250 00

Account No. 24

TRAVELING EXPENSE

192— Dec.	31	Cash		J	$	2,500	00	192— Dec.	31	Selling expense	J	$	2,500	00

Account No. 25

STATIONERY AND PRINTING

192— Dec.	31	Accounts payable		P J	$	125	00	192— Dec.	31	Selling expense	J	$	125	00

Account No. 26

ADVERTISING

192— Dec.	31	Accounts payable		P J	$	1,250	00	192— Dec.	31	Selling expense	J	$	1,250	00

Account No. 27

SALARIES—GENERAL

192— Dec.	31	Cash		J	$	5,750	00	192— Dec.	31	Selling expense	J	$	5,750	00

Account No. 28

TELEPHONE AND TELEGRAPH

192— Dec.	31	Cash		J	$	125	00	192— Dec.	31	Selling expense	J	$	125	00

Account No. 29

POSTAGE

192—						192—					
Dec.	31	Cash	J	$	187 50	Dec.	31	Selling expense	J	$	187 50

Account No. 30

LEGAL EXPENSE

192—						192—					
Dec.	31	Cash	J	$	62 50	Dec.	31	Selling expense	J	$	62 50

Account No. 31

INVENTORY

192—						192—					
Apr.	1	Balance	J	$	10,067 00	Apr.	1	Sundries	*I R*	$	10,067 00

Account No. 32

DEPARTMENT S-1

192—						192—					
Dec.	31	Cost of sales	*C of S*	$	26,836 00	Dec.	31	Sales	*A of S*	$	32,880 00
	31	Selling expenses	J		2,531 75						
	31	Net profit	J		3,512 25						
				$	32,880 00					$	32,880 00

Account No. 33

DEPARTMENT S-2

192—						192—					
Dec.	31	Cost of sales	*C of S*	$ 37,866	10	Dec.	31	Sales	*A of S*	$ 45,186	00
	31	Selling expenses	*J*	3,577	25						
	31	Net profit	*J*	3,742	65						
				$ 45,186	00					$ 45,186	00

Account No. 34

DEPARTMENT S-3

192—						192—					
Dec.	31	Cost of sales	*C of S*	$ 43,924	50	Dec.	31	Sales	*A of S*	$ 49,820	00
	31	Selling expenses	*J*	4,141	00						
	31	Net profit	*J*	1,754	50						
				$ 49,820	00					$ 49,820	00

Account No. 35

SELLING EXPENSE

192—					192—				
Dec.	31	Sundries		$ 10,250	00	Dec.	31	Sundries	*J*	$ 10,250	00

Account No. 36

PROFIT AND LOSS

192—					192—				
Dec.	31	Balance		$ 10,699	00	Dec.	31	Department profits	*J*	$ 9,009	40
							31	Adjustments	*J*	1,689	60
				$ 10,699	00					$ 10,699	00
						192—					
						Jan.	1	Balance		$ 10,699	00

STATEMENT OF PROFIT AND LOSS

For the 9 Months Ending December 31, 192—

Departments	Sales		Gross Profit		Selling Expense		Net Profit	
	Amount	Cost	Amount	Per Cent.	Amount	Per Cent.	Amount	Per Cent.
S–1	$ 32,880 00	$ 26,836 00	$ 6,044 00		$ 2,531 75		$ 3,512 25	
S–2	45,186 00	37,866 10	7,319 90		3,577 25		3,742 65	
S–3	49,820 00	43,924 50	5,895 50		4,141 00		1,754 50	
							$ 9,009 40	
Adjustment of inventory							1,689 60	
Total	$127,886 00	$108,626 60	$19,259 40		$10,250 00		$10,699 00	

Approved_____ Correct_____

(Form described in Part 5, Art. **36,** Fig. 17, modified to meet requirements of problem)

TRIAL BALANCE, DECEMBER 31, 192—

Account No.				
1	Capital			$ 61,067 00
2	Accounts receivable		$ 37,886 00	
3	Accounts payable			11,141 00
4	Machinery and tools		25,000 00	
5	Reserve for depreciation			1,375 00
6	Cash		7,157 00	
	Inventory:			
7	Raw material	$6,215.00		
8	Material—Department 1	2,450.00		
9	Material—Department 2	1,395.00		
10	Labor—Department 1	1,245.00		
11	Labor—Department 2	745.00		
12	Overhead	2,189.00		
			$ 14,239 00	
36	Profit and loss account (net profit)			10,699 00
	Total		$ 84,282 00	$ 84,282 00

BALANCE SHEET, DECEMBER 31, 192—

Assets			
Cash		$ 7,157 00	
Accounts receivable		37,886 00	
Inventory:			
Raw material	$6,215.00		
Material—Department 1	2,450.00		
Material—Department 2	1,395.00		
Labor—Department 1	1,245.00		
Labor—Department 2	745.00		
Overhead	2,189.00	14,239 00	
Machinery and tools		25,000 00	
Total assets			$ 84,282 00
Liabilities			
Accounts payable		$ 11,141 00	
Capital		61,067 00	
Reserve for depreciation		1,375 00	
Surplus, per statement of profit and loss		10,699 00	
Total liabilities			$ 84,282 00

COST ACCOUNTING
(PART 11)

PROBLEMS IN COST ACCOUNTING
(Continued)

PROBLEM 4—SPECIAL-ORDER SYSTEM

1. This problem illustrates the use of a special-order system based on the productive-labor method, which was treated in *Cost Accounting,* Part 7.

STATEMENT OF PROBLEM

2. The balance sheet of the Jones Manufacturing Company showed the following items at January 1, 192—:

Cash	$ 18,188.70	
Notes Receivable	7,130.43	
Accounts Receivable	7,548.77	
Finished Stock	26,313.01	
Work in Process	658.06	
Raw Material	45,307.79	
Plant Account	47,471.05	
Notes Payable		$ 25,848.91
Accounts Payable		7,316.21
Surplus		19,452.69
Capital		100,000.00
Total	$152,617.81	$152,617.81

3. Complete stock records for the raw material and finished stock were kept and a classification of the inventory (see

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Part 7, Arts. **25** and **31**, and Figs. 12 and 18) showed that the following articles were on hand at January 1, 192—:

RAW MATERIAL

Quantity	*Cost*	*Material Classification*
23,646	$11,841.50	800
34,713	21,022.62	340
15,033	12,073.62	410
396	370.05	127

FINISHED STOCK

Article	*Quantity*	*Amount*
A	150	$ 8,420.16
B	192	14,735.29
C	32	2,894.43
D	1	263.13

4. Production orders (see Part 7, Art. **2**, and Fig. 1) were issued to the factory for the following articles:

1,005 of Article A
1,724 of Article B
321 of Article C
4 of Article D

The forms used for recording these instructions and this information were a combination Production Order and Cost Sheet. (See Part 7, Art. **27**, and Figs. 13 and 14.)

In order to complete these production orders it was necessary to order additional material. Therefore proper purchasing instructions and orders (see Part 7, Arts. **21** and **22**, and Figs. 8 and 9) were placed for the following material:

Material Classification	*Quantity*	*Price*
800	120,000	$ .50
340	215,000	.60
410	32,000	.80
127	3,000	.90

During the month, all material that had been ordered was received and the Reports of Material Received were prepared and attached to the invoices for entry upon the stock records and Accounts Payable vouchers. (See Part 7, Art. **23**, and Figs. 10 and 11; also Part 5, Art. **27**, and Figs. 1 and 2.)

5. The following shows the details of the material received together with the direct charges for freight. The prices shown upon the purchase orders were assumed to be correct.

MATERIAL RECEIVED

Material Classification	*Gross*	*Tare*	*Net*
800	120,050	50	120,000
340	215,100	100	215,000
410	32,025	25	32,000
127	3,005	5	3,000

The freight upon this material was as follows:

Material Classification	*Charges*
800	$ 600.00
340	1,200.00
410	100.00
127	100.00

These freight charges being added to the original material cost will make the total cost $219,300.00. A rate per unit should be established for charging the material into process and for stock-taking purposes.

All expenditures were distributed and entered upon Accounts Payable vouchers. (See Part 5, Art. **27,** and Figs. 1 and 2). These vouchers were recorded according to date and number in a Register of Accounts Payable (see Part 5, Art. **28,** Fig. 3, and Part 7, Art. **10,** Fig. 6) which was so designed as to facilitate the postings to the accounts affected.

The Register of Accounts Payable showed the expenditures for the month to be as follows:

Raw material	$217,300.00
Raw material—Freight and cartage	2,000.00
Supplies	410.63
Repairs and maintenance	2,279.72
Insurance	769.88
Water rents	517.55
Productive labor	14,127.53
Indirect labor	2,607.40
Superintendent and office	6,452.25
Taxes	716.26
Stationery and printing—Factory	233.88
Telegraph and telephone—Factory	49.97
Light, heat, and power	6,908.36

Salary—General Office and salesmen	26,001.65
Printing, stationery, and postage—General Office	1,604.89
Legal expense	613.68
Light and heat—General Office	1,034.69
Telephone and telegraph—Office	686.81
Commission	5,617.95
Traveling	7,137.93
Advertising	22,379.29
General expense	3,317.36
Collection	404.22
Total expenditures	$323,171.90

6. Depreciation amounting to $4,747.10 is entered through the Journal and is considered to be an indirect manufacturing expense.

The Pay Roll was compiled upon a form similar to that shown in Part 7, Art. **5,** Fig. 4 (see also Part 7, Art. **30** and Fig. 17), before the Pay Roll was attached to the Accounts-Payable voucher. All direct and indirect workers as well as the supervision labor were properly entered and classified upon this Pay-Roll form.

In this problem it is assumed that the time reports (see Part 7, Art. **4,** Fig. 3, and Art. **29,** Fig. 16) showed the total quantity produced as well as the Pay-Roll information.

The time reports showed that the production orders were completed.

The material requisitions (see Part 7, Art. **28,** Fig. 15) for the month were summarized and this summary showed that the following material had been issued from the Raw-Stock room and had been delivered to the operating departments of the factory.

Product Chargeable	*Article*	*Quantity*	*Amount*
A	800	119,707	$ 60,452.24
B	340	174,688	105,791.42
C	410	25,875	20,780.46
D	127	2,024	1,889.13

The entire amount of productive labor for the month as entered upon the Register of Accounts Payable was charged to work in process. The indirect manufacturing expenses chargeable to work in process amounted to $25,693.00.

7. The summary of all the production reports (see Part 7, Art. **7**, Fig. 5, and Art. **44**, Figs. 24 and 25) showed that the following articles were produced:

	Production			
Article	*Material Quantity*	*Class*	*Amount*	*Labor*
A	100,468	800	$ 50,736.73	$ 2,000.00
B	172,393	340	104,401.63	10,000.00
C	32,129	410	25,803.45	1,000.00
D	378	127	352.32	100.00

In ascertaining the total cost of the articles produced, it will be necessary to include the indirect manufacturing expenses as part of such cost. These indirect expenses are distributed and entered upon the Cost Sheets according to the productive-labor method.

8. During the month the following sales were reported which should be costed according to the information shown by the Cost Sheet or Finished Stock Record. (See Part 7, Art. **12**, Fig. 7; Art. **35**, Fig. 20; and Art. **37**, Fig. 23.)

Article	*Quantity*	*Sales Price per Article*
A	1,010	$ 90.00
B	1,800	110.00
C	330	135.00
D	5	300.00

Five articles *B* were returned during the month. The information for recording this transaction should be entered upon forms similar to those described and shown in Part 7, Arts. **36** and **37**, and Figs. 21, 22, and 23.

9. The following Cash Receipts and Cash Payments were reported during the month. (See Part 5, Arts. **31** and **32**, and Fig. 11.)

Cash Receipts:	
Accounts Receivable	$324,870.00
Notes Payable discounted	10,000.00
Notes Receivable	5,000.00
Interest—Notes Receivable	210.00
Cash Payments:	
Notes Payable	25,000.00
Accounts Payable	310,875.60
Interest—Notes Payable	600.00

10. The problem is: To provide a reserve through a Journal entry amounting to $2,000.00 to cover doubtful accounts.

To design all the forms and records that are necessary to record the information properly.

To enter all transactions upon these forms and records.

To post all information to the ledger accounts affected.

To prepare a Balance Sheet as at January 31, 192—, and a Statement of Profit and Loss for the month of January, 192—. (See Part 7, Arts. **60** and **61**, and Part 5, Arts. **36**, **37**, and **38**, and Figs. 17, 18, and 19.)

SOLUTION OF PROBLEM 4

11. Explanations.—The following is a list of the necessary journal entries and forms. They are arranged in the order in which they should be made and posted into the ledger.

Journal Entry No. 1: Opening entry to place upon the books the Assets and Liabilities as at January 1, 192—.

Raw-Material Stock Record: (See Part 7, Art. **25**, and Part 2, Arts. **8** to **13.**) Raw-material stock on hand January 1, 192—, is entered under each material classification. These entries aggregate $45,307.79 and this amount corresponds to the amount charged to the Raw-Material account as shown in Journal Entry 1. A form of Raw-Material Stock Record is shown in Fig. 1.

Finished-Stock Record: (See Part 7, Art. **31**, and Part 4, Arts. **17** to **22.**) The finished stock on hand January 1, 192—, is entered on the Finished Stock Records, Figs. 2, 3, 4, and 5, the entries aggregating $26,313.01, as in Journal Entry No. 1.

Production Order and Cost Sheet: (See Part 7, Art. **27**, and Part 2, Arts. **14**, **15**, and **16.**) This form is made out in duplicate, Fig. 6 being the original and Fig. 7 the duplicate. The original order and duplicate contain merely data as to quantity and description, the other figures being added later, as will be explained further on.

Purchase Requisition: (See Part 7, Art. **21**, and Part 2, Art. **3.**) This form, shown filled out in Fig. 8, is filled out for the additional material required.

Purchase Order: (See Part 7, Art. **22,** and Part 2, Art. **4.**) This form, shown filled out in Fig. 9, is made out upon receipt of the Purchase Requisition. The Purchasing Agent will send the Purchase Order to the firm from whom the goods are to be bought.

Report of Material Received: (See Part 7, Art. **23,** and Part 2, Arts. **5, 6,** and **7.**) On this form, which is made out in duplicate, the receiving clerk enters the quantities received, as shown in Fig. 10. Later the purchasing department completes the record on the duplicate, as shown in Fig. 11.

Accounts Payable Voucher: (See Part 5, Art. **27.**) A voucher, Fig. 12, is drawn in favor of the creditor for the invoice covering the goods received.

Register of Accounts Payable: (See Part 7, Arts. **10** and **38,** and Part 5, Art. **28.**) All vouchers are to be entered, as in Fig. 13, and the proper distribution of them made. The total under Vouchers Payable is posted to the credit of the Accounts Payable account. Miscellaneous and Operating accounts are debited as shown. The voucher illustrated in Fig. 12 shows only the purchase made from one concern, but similar vouchers are prepared for all expenditures.

Journal Entry No. 2: A charge for depreciation is made to Overhead account and a credit is made to the Reserve for Depreciation account.

Factory Pay-Roll: (See Part 7, Art. **30,** and Part 4, Arts. **10** and **11.**) As shown in Fig. 14, distribution is made of all wages and salaries. No postings are made from this form. This gives the detail for Salary and Labor items as shown among the expenditures.

Report of Material Delivered: (See Part 4, Art. **9.**) Material is delivered from the stock room on requisition, as in Fig. 15. The Report of Material Delivered, Fig. 16, is a summary of all the Material Requisitions. The total is posted to credit of Raw Material account and to the debit of Work in Process account, also proper entries are made on Raw-Material Stock Sheet, under Material Delivered. The last unit cost is used as a basis for pricing the Material Requisitions and the Report of Material Delivered.

Journal Entry No. 3: A charge is made to Work in Process account for the productive labor for the month.

Journal Entry No. 4: A transfer is made of the indirect manufacturing expenses as shown in Overhead account to Work in Process.

Production Order and Cost Sheet: (See Part 7, Art. **27,** and Part 2, Arts. **14, 15,** and **16.**) The production is entered upon the Production Order and Cost Sheet, Figs. 6 and 7. Distribution is made of the Indirect manufacturing expenses (Overhead) upon the basis of productive labor. The total productive labor for the month charged to Work in Process was $14,127.53 while but $13,100.00 of this has now entered into Finished Stock. The proper proportion of overhead must therefore be left in Work in Process account to cover goods in the course of manufacture but not completed. The overhead rate is 181.86 per cent. of the productive labor. A summary is made of costs of different articles and the total cost of the production is charged to the Finished Stock Account, the Work in Process Account being credited with the same amount. Also proper entries are made on Finished Stock Records A, B, C, and D. The total cost under each sales classification is divided by the number of articles produced to obtain the cost per article.

Credit Certificate: (See Part 7, Art. **36,** and Part 5, Art. **29.**) This form is prepared in duplicate. The original, Fig. 17, is intended for the customer receiving credit and acts as a credit memorandum. The cost of goods returned is entered on the duplicate, Fig. 18. The necessary postings to the Sales, Finished Stock, and Accounts Receivable accounts are then made. An entry should also be made on the Finished-Stock Record B.

Register of Sales and Costs: (See Part 7, Art. **37,** and Part 5, Art. **30.**) In this form, shown in Fig. 19, the basis for costing sales is taken from the average Cost per Article as shown upon the Finished Stock record, Figs. 2, 3, 4, and 5. The sales account is credited at selling prices under each classification and the total of all sales is debited to the Accounts Receivable account. The Finished Stock account is credited

with the cost of sales, and the debits to the respective sales accounts are then made. The balances then shown in the Sales accounts, after considering the merchandise returned, if any, represents the gross profit upon each sales classification. Proper entries for the sales *at cost* should then be made on the various Finished Stock records.

Journal Entries 5 and 6: A debit and credit for cash is made showing receipts and expenditures.

Journal Entry No. 7: A charge of $2,000.00 is made for Bad Debts and a reserve account credited.

Trial Balance: The trial balance as of January 31, 192—, Fig. 20, should be taken off after all postings have been made to the ledger accounts. The balances of the raw-material stock records and the finished-stock records should be in agreement with the controlling accounts.

Balance Sheet: This statement, Fig. 21, is prepared from the foregoing trial balance.

Profit and Loss Statement: In this statement, Fig. 22, the sales and cost of sales are taken from the balances of the four Sales accounts as shown by the trial balance. The selling and administrative expenses are apportioned over the various departments on the basis that the cost of sales bears to the total selling and administrative expenses.

Note: A Production Order of the previous month, upon which work amounting to $658.06 was charged, remained uncompleted and still in process at the end of the current month covered by this problem.

Selling and Administrative Expenses: In actual practice, of course, these expenses would be shown in detail in the ledger, separate accounts being opened for each item composing the selling and administrative expenses. However, in order to eliminate bookkeeping detail, all these expenses have been grouped and posted under one account.

Overhead Account: In practice, a separate account might be opened for each item which composes the indirect expenses but, in order to eliminate the details of bookkeeping, all manufacturing overhead expenses have been grouped for posting to the one Overhead account.

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Entry No. 1					
			Sundries		
			To Sundries:		
$ 18,188 70		*L 3*	Cash		
7,130 43		*L 6*	Notes receivable		
7,548 77		*L 4*	Accounts receivable		
26,313 01		*L 13*	Finished stock		
658 06		*L 11*	Work in process		
45,307 79		*L 12*	Raw material		
47,471 05		*L 8*	Plant account		
			Notes payable	*L 7*	$ 25,848 91
			Accounts payable	*L 5*	7,316 21
			Surplus	*L 2*	19,452 69
			Capital	*L 1*	100,000 00
			(To open accounts, per Balance Sheet as at that date)		
Entry No. 2					
$ 4,747 10		*L 15*	Overhead		
			To Reserve for Depreciation	*L 9*	$ 4,747 10
			(Provision for depreciation for month)		
Entry No. 3					
$ 14,127 53		*L 11*	Work in Process		
			To Productive Labor	*L 14*	$ 14,127 53
			(Transfer of productive labor per pay roll)		

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Entry No. 4					
$ 25,693 00	*L 11*	Work in process			
		To Overhead Account	*L 15*	$ 25,693	00
		(Transfer of overhead to operating account)			
Entry No. 5					
$340,080 00	*L 3*	Cash			
		To Sundries			
		Accounts receivable	*L 4*	$ 324,870	00
		Notes payable discounted	*L 7*	10,000	00
		Notes receivable	*L 6*	5,000	00
		Interest—notes receivable	*L 20*	210	00
		(To record cash receipts)			
Entry No. 6					
		Sundries to Cash	*L 3*	$ 336,475	60
$ 25,000 00	*L 7*	Notes payable			
310,875 60	*L 5*	Accounts payable			
600 00	*L 20*	Interest—notes payable			
		(To record cash disbursements)			
Entry No. 7					
$ 2,000 00	*L 20*	Selling and Administrative Expenses			
		To Reserve for Bad Debts	*L 10*	$ 2,000	00
		(To provide for doubtful accounts)			

STOCK—RAW MATERIAL

Classification Nos. 800, 340, 410, 127

Article_____ Location_____ Maximum_____ Minimum_____

Class Number	Ordered		Received					Delivered				Balance			Reserved	Available
	Requisition	Quantity	Requisition	Material Received No.	Quantity	Rate	Amount	Requisition	Quantity	Rate	Amount	Quantity	Rate	Amount		
800			1/1/2__	Inv.	23,646	$.501	$ 11,841 50									
					120,000	.505	60,600 00	1/31	119,707	$.505	$ 60,452 24	23,939		$11,989 26		
340			1/1/2__	Inv.	34,713	.611	21,022 62									
					215,000	.606	130,200 00	1/31	174,688	.606	105,791 42	75,025		45,431 20		
410			1/1/2__	Inv.	15,033	.803	12,073 62									
					32,000	.803	25,700 00	1/31	25,875	.803	20,780 46	21,158		16,993 16		
127			1/1/2__	Inv.	396	.935	370 05									
					3,000	.933	2 800 00	1/31	2,024	.933	1,889 13	1,372		1,280 92		
														$75,694 54		

(Part 7, Fig. 12, modified to meet the requirements of the problem)

FIG. 1

STOCK—FINISHED PRODUCTS AND PARTS

Style Maximum
Article *A* Minimum

Date	Produced			Used or Sold		Balance	
	Quantity	Cost	Amount	Quantity	Amount	Quantity	Amount
192—							
Jan. 1	150	$56 13	$ 8,420 16				
31	1,005	56 09	56,374 01	1,010	$56,650 90	145	$8,143 27

(Part 7, Fig. 18, modified)

FIG. 2

STOCK—FINISHED PRODUCTS AND PARTS

Style Maximum
Article *B* Minimum

Date	Produced			Used or Sold		Balance	
	Quantity	Cost	Amount	Quantity	Amount	Quantity	Amount
192—		$76 75					
Jan. 1	192	76 91	$ 14,735 29				
31	1,724	76 90	132,588 11				
(Returned)	5		384 50	1,800	$138,420 00	121	$9,287 90

FIG. 3

STOCK—FINISHED PRODUCTS AND PARTS

Maximum
Style Minimum
Article *C*

Date	Produced			Used or Sold		Balance	
	Quantity	Cost	Amount	Quantity	Amount	Quantity	Amount
192—		$90 45					
Jan. 1	32	89 17	$ 2,894 43				
31	321		28,622 09	330	$29,465 70	23	$2,050 82

FIG. 4

STOCK—FINISHED PRODUCTS AND PARTS

Maximum
Style Minimum
Article *D*

Date	Produced			Used or Sold		Balance	
	Quantity	Cost	Amount	Quantity	Amount	Quantity	Amount
192—							
Jan. 1	1	$263 13	$263 13				
31	4	158 55	634 18	5	$897 31		

FIG. 5

PRODUCTION ORDER AND COST SHEET

No. *89*
Jan. 1, 192__

_____Dept.

Date Wanted *Jan. 31, 192__*

Completed_____

Signed_____, Foreman

You are hereby authorized to manufacture the articles as stated.
W. F. Maynard, Supt.

Quantity	Description	Diagram
1,005	Article A	
1,724	Article B	
321	Article C	
4	Article D	

Material				Labor					Summary	
Quantity	Article	Class	Amount	Date	Operation	Unit	Rate	Amount	Analysis	Amount
100,468	A	800	$ 50,736 73					$ 2,000 00	Material cost..	$181,294 13
172,393	B	340	104,401 63					10,000 00	Labor cost	13,100 00
32,129	C	410	25,803 45					1,000 00	Indirect.....	23,824 26
378	D	127	352 32					100 00	Total cost.....	$218,218 39
			$181,294 13					$13,100 00		

(Part 7, Figs. 13 and 14, modified)

FIG. 6

DUPLICATE

No. *89*
Jan. 1, 192__

_____ Dept.

Date Wanted *Jan. 31, 192__*
Completed *Jan. 31, 192__*
Signed: *F. Dobson*, Foreman

You are hereby authorized to manufacture the articles as stated.
W. F. Maynard, Supt.

Quantity	Description	Diagram
1,005	Article A	
1,724	Article B	
321	Article C	
4	Article D	

SUMMARY OF COST SHEET

Articles	A	B	C	D	Total
Number Made	1,005	1,724	321	4	
Material	$50,736.73	$104,401.63	$25,803.45	$352.32	$181,294.13
Labor	2,000.00	10,000.00	1,000.00	100.00	13,100.00
Indirect	3,637.28	18,186.48	1,818.64	181.86	23,824.26
Total	$56,374.01	$132,588.11	$28,622.09	$634.18	$218,218.39
Cost per article	$ 56.09	$ 76.91	$ 89.17	$158.55	

FIG. 7

PURCHASE REQUISITION

To James J. Brown, Purchasing Agent — No. *1246*
Please order the following articles: — *Jan. 1, 192__*

For the Use of Department	Order Number	Quantity	Description	Date Wanted		Date Ordered		Purchase Order Number
		120,000	Classification No. 800	Jan.	10	Jan.	1	1,575
		215,000	Classification No. 340	Jan.	10	Jan.	1	1,575
		32,000	Classification No. 410	Jan.	10	Jan.	1	1,575
		3,000	Classification No. 127	Jan.	10	Jan.	1	1,575

Approved:
W. F. Maynard
Supt.

Signed:
R. Palmer
Stock Clerk

(Part 7, Fig. 8, modified)

FIG. 8

PURCHASE ORDER

To *Pittsburgh Steel Corp.* — No. *1575*
Address *Pittsburgh, Penna.* — *Jan. 2, 192__*
Terms—*As usual* — Ship to *Raw Material Stores*
Place our order number on all invoices and packages. — Address *Trenton*
Send duplicate invoices for each shipment. — Via *Erie R. R.*

To Be Shipped on or Before	Description	Quantity	Rate
Jan. 5	Classification 800	120,000	$ 50
	Classification 340	215,000	60
	Classification 410	32,000	80
	Classification 127	3,000	90

You are hereby authorized to furnish the above material as stated. Acknowledge receipt of this order.

JONES MANUFACTURING COMPANY
Per *Jas. J. Brown*
Purchasing Agent

(Part 7, Fig. 9, modified)

FIG. 9

REPORT OF MATERIAL RECEIVED

No. *3029*

Favor of *Pittsburgh Steel Corporation*

Purchase Order No. *1575*

Articles	Quantity		
	Gross	Tare	Net
Classification 800	120,050	50	120,000
Classification 340	215,100	100	215,000
Classification 410	32,025	25	32,000
Classification 127	3,005	5	3,000

Date Received *Jan. 9, 192__*
Received by
Tom Watson,
Receiving Clerk

Date of Invoice *Jan. 7, 192__*
Entered by *G. B. S.*

(Part 7, Figs. 10 and 11, modified)

FIG. 10

REPORT OF MATERIAL RECEIVED

Favor of *Pittsburgh Steel Corporation*

No. *3029*

Purchase Order No. *1575*

Articles	Quantity			Rate	Cost	Charges	Total Cost
	Gross	Tare	Net				
Classification 800	120,050	50	120,000	$ 50	$ 60,000 00	$ 600 00	$ 60,600 00
Classification 340	215,100	100	215,000	60	129,000 00	1,200 00	130,200 00
Classification 410	32,025	25	32,000	80	25,600 00	100 00	25,700 00
Classification 127	3,005	5	3,000	90	2,700 00	100 00	2,800 00
							$219,300 00

Date Received *Jan. 9, 192__*
Received by *Tom Watson*
Receiving Clerk

Date of Invoice *Jan. 7, 192__*
Entered by *B. F. L.*

FIG. 11

ACCOUNTS PAYABLE VOUCHER

No. *4264*
Date *Jan. 10, 192__*

Favor of *Pittsburgh Steel Corporation*

Date of Invoice	Description	Amount of Invoice	Deduction	Amount Payable
Jan. 7	120,000 Classification 800 at $.50	$ 60,000 00		
	215,000 Classification 340 at $.60	129,000 00		
	32,000 Classification 410 at $.80	25,600 00		
	3,000 Classification 127 at $.90	2,700 00		$ 217,300 00

Approved for payment:
Chas. A. Bennett, Treas.

Correct:
J. P. Foster,
Auditor

(Adapted from Part 5, Figs. 1 and 2)

FIG. 12

REGISTER OF ACCOUNTS PAYABLE

For January, 192__

CREDIT										DEBIT								
Accounts Payable						When and How Paid				Miscellaneous Accounts			Operating Accounts			Property Accounts		
Date	Voucher No.	Favor of	Terms	Folio	Vouchers Payable	Date	Check Number	Bank	Amount	Name	Folio	Amount	Factory Expense	Selling Expense	Administrative Expense	Machinery and Tools	Real Estate and Building	Furniture and Fixtures
Jan. 7	4264	Pittsburgh Steel Corp.	2/10, 30 net	167	$217,300 00					Raw Material	L 12	$217,300 00						
					2,000 00					Raw Material—freight and cartage	L 12	2,000 00						
					410 63								$ 410 63					
					2,279 72								2,279 72					
					769 88								769 88					
					517 55								517 55					
					14,127 53					Productive Labor	L 14	14,127 53						
					2,607 40								2,607 40					
					6,452 25								6,452 25					
					716 26								716 26					
					233 88								233 88					
					49 97								49 97					
					6,908 36								6,908 36					
					26,001 65										$26,001 65			
					1,604 89										1,604 89			
					613 68										613 68			
					1,034 69										1,034 69			
					686 81										686 81			
					5,617 95									$ 5,617 95				
					7,137 93									7,137 93				
					22,379 29									22,379 29				
					3,317 36										3,317 36			
					404 22										404 22			
					$323,171 90							$233,427 53	$20,945 90	$35,135 17	$33,663 30			
					L 5								L 15	L 20	L 20			

(Adapted from Part 7, Fig. 6, and Part 5, Fig. 3)

Fig. 13

268-I L T 133C. 253B § 23

FACTORY PAY ROLL

FOR MONTH ENDING *January 31, 192__*

Employes							Distribution					
Class	Check Number	Name	Rate	Time	Amount		Direct		Indirect		Superintendent and Office	
All	Various	Sundry (productive labor)			$14,127	53	$14,127	53				
		Sundry (indirect labor)			2,607	40			$2,607	40		
		Sundry (superintendent and office—factory)			6,452	25					$6,452	25
					$23,187	18	$14,127	53	$2,607	40	$6,452	25

(Part 7, Fig. 17)

FIG. 14

MATERIAL REQUISITION

No. *6954*

Raw Material Stock Room Department Date *Jan. 15, 19*__

Description				Charge			
Article	Size	Weight	Amount	Order Number	Rate	Amount	
Classification 800	1¼×6	1,000	60	850	$.505	$505	00

Received by
H. Hooper
Drill Press Hand

Approved:
F. Dobson, Foreman

(Part 7, Fig. 15, modified)

FIG. 15

REPORT OF MATERIAL DELIVERED

No.

__Dept. Date *Jan. 31, 19*__

Order Number	Product Chargeable	Article	Quantity	Rate	Amount	
	A	800	119,707		$ 60,452	24
	B	340	174,688		105,791	42
	C	410	25,875		20,780	46
	D	127	2,024		1,889	13
					$188,913	25
		(Work in Process Dr. *L 11*)				
		(Raw Material Cr. *L 12*)				

Approved:
F. Dobson, Foreman

Correct:
R. Palmer
Stock Clerk

(Part 4, Fig. 1)

FIG. 16

REGISTER O

FOR PERIOD

SALES

Date	No.	Name	Quantity	Folio	Accounts Receivable		A		B		C
			1,010		$ 90,900	00	$90,900	00			
			1,800		198,000	00			$198,000	00	
			330		44,550	00					$44,550
			5		15,000	00					
					$334,950	00	$90,900	00	$198,000	00	$44,550
					L 4		*L 16*		*L 17*		*L 18*

(See Part 7, F

ES AND COSTS

JANUARY, 192__

		COST OF SALES											
D		A		B		C		D		Total		Remarks
		$56,650	90							$ 56,650	90	
				$138,420	00					138,420	00	
						$29,465	70			29,465	70	
,500	00							$897	31	897	31	
,500	00	$56,650	90	$138,420	00	$29,465	70	$897	31	$225,433	91	
19		*L 16*		*L 17*		*L 18*		*L 19*		*L 13*		

d Part 5, Fig. 9)

JONES MANUFACTURING COMPANY
NEW YORK
CREDIT CERTIFICATE

Business:
Salesman:
Favor of:
Address:

Date *Jan. 31, 192__*
No. 320

Article		Selling Price	
Description	Quantity	Rate	Amount
B	5	$110 00	$550 00

(Part 7, Figs. 21 and 22)

FIG. 17

JONES MANUFACTURING COMPANY
NEW YORK
CREDIT CERTIFICATE

Business:
Salesman:
Favor of:
Address:

Date *Jan. 31, 192__*
No. 320

Article		Selling Price		Cost Price	
Description	Quantity	Rate	Amount	Rate	Amount
B	5	$110 00	$550 00	$76 90	$384 50
		Dr. Sales B L 17 *Cr. Accts. Rec. L 4*		*Dr. Finished Stock L 13* *Cr. Sales B L 17*	

Correct:

(Part 7, Figs. 21 and 22)

FIG. 18

Account No. 1

LEDGER

CAPITAL

					192__ Jan.	1	Balance	J	$100,000	00

Account No. 2

SURPLUS

					192__ Jan.	1	Balance	J	19,452	69

Account No. 3

CASH

192__ Jan.	1	Balance	J	$ 18,188	70	192__ Jan.	31	Sundries	J	$336,475	60
	31	Sundries	J	340,080	00			Balance		21,793	10
				$358,268	70					$358,268	70
Feb.	1	Balance		$ 21,793	10						

Account No. 4

ACCOUNTS RECEIVABLE

192—						192—				
Jan.	1	Balance	J	$ 7,548 77		Jan.	31	Returned sales	C C	$ 550 00
	31	Sales	R S & C	334,950 00			31	Cash	J	324,870 00
				$342,498 77				Balance		17,078 77
										$342,498 77
Feb.	1	Balance		$ 17,078 77						

Account No. 5

ACCOUNTS PAYABLE

192—						192—				
Jan.	31	Cash	J	$ 310,875 60		Jan.	1	Balance	J	$ 7,316 21
		Balance		19,612 51			31	Sundries	R A P	323,171 90
				$ 330,488 11						$ 330,488 11
						Feb.	1	Balance		$ 19,612 51

Account No. 6

NOTES RECEIVABLE

192—						192—				
Jan.	1	Balance	J	$ 7,130 43		Jan.	31	Cash	J	$ 5,000 00
								Balance		2,130 43
				$ 7,130 43						$ 7,130 43
Feb.	1	Balance		$ 2,130 43						

LEDGER—(*Continued*)

Account No. 7

NOTES PAYABLE

192—						192—					
Jan.	31	Cash	J	$ 25,000	00	Jan.	1	Balance	J	$ 25,848	91
		Balance		10,848	91		31	Cash	J	10,000	00
				$ 35,848	91					$ 35,848	91
						Feb.	1	Balance		$ 10,848	91

Account No. 8

PLANT ACCOUNT

192—					
Jan.	1	Balance	J	$ 47,471	05

Account No. 9

RESERVE FOR DEPRECIATION

192—					
Jan.	31	Overhead	J	$ 4,747	10

Account No. 10

RESERVE FOR BAD DEBTS

192—					
Jan.	31	Reserve	J	$ 2,000	00

LEDGER—(*Continued*)

Account No. 11

WORK IN PROCESS

192—						192—					
Jan.	1	Balance	*J*	$ 658	06	Jan.	31	Finished stock	*C S*	$ 218,218	39
	31	Raw material	*R M D*	188,913	25			Balance		11,173	45
	31	Productive labor	*J*	14,127	53						
	31	Overhead	*J*	25,693	00						
				$ 229,391	84					$ 229,391	84
Feb.	1	Balance		$ 11.173	45						

Account No. 12

RAW MATERIAL

192—						192—					
Jan.	1	Balance	*J*	$ 45,307	79	Jan.	31	Work in process	*R M D*	$ 188,913	25
	31	Accounts payable	*R A P*	217,300	00			Balance		75,694	54
	31	Freight and cartage	*R A P*	2,000	00						
				$ 264,607	79					$ 264,607	79
Feb.	1	Balance		$ 75,694	54						

Account No. 13

FINISHED STOCK

192—						192—					
Jan.	1	Balance	*J*	$ 26,313	01	Jan.	31	Cost of sales	*R S & C*	$ 225,433	91
	31	Work in process	*C S*	218,218	39			Balance		19,481	99
	31	Returned sales	*C C*	384	50						
				$ 244,915	90					$ 244,915	90
Feb.	1	Balance		$ 19,481	99						

Account No. 14

PRODUCTIVE LABOR

192—						192—					
Jan.	31	Accounts payable	*R A P*	$ 14,127	53	Jan.	31	Work in process	*J*	$ 14,127	53

Account No. 15

OVERHEAD ACCOUNT

192—						192—					
Jan.	31	Accounts payable	*R A P*	$ 20,945	90	Jan.	31	Work in process	*J*	$ 25,693	00
	31	Reserve for depreciation	*J*	4,747	10						
				$ 25,693	00					$ 25,693	00

LEDGER—(*Continued*)

Account No. 16

SALES A

192—					192—				
Jan.	31	Cost of sales	*R S & C*	$ 56,650 90	Jan.	31	Accounts receivable	*R S & C*	$ 90,900 00
		Balance		34,249 10					
				$ 90,900 00					$ 90,900 00
					Feb.	1	Balance		$ 34,249 10

Account No. 17

SALES B

192—					192—				
Jan.	31	Cost of sales	*R S & C*	$ 138,420 00	Jan.	31	Accounts receivable	*R S & C*	$ 198,000 00
	31	Returns	*C C*	550 00		31	Cost of returns	*C C*	384 50
		Balance		59,414 50					
				$ 198,384 50					$ 198,384 50
					Feb.	1	Balance		$ 59,414 50

LEDGER—(*Continued*)

Account No. 18

SALES C

192—					192—				
Jan.	31	Cost of sales	*R S & C*	$ 29,465 70	Jan.	31	Accounts receivable	*R S & C*	$ 44,550 00
		Balance		15,084 30					
				$ 44,550 00					$ 44,550 00
					Feb.	1	Balance		$ 15,084 30

Account No. 19

SALES D

192—					192—				
Jan.	31	Cost of sales	*R S & C*	$ 897 31	Jan.	31	Accounts receivable	*R S & C*	$ 1,500 00
		Balance		602 69					
				$ 1,500 00					$ 1,500 00
					Feb.	1	Balance		$ 602 69

LEDGER—(*Continued*)

Account No. 20

SELLING AND ADMINISTRATIVE EXPENSES

192—						192—				
Jan.	31	Selling expense (accounts payable)	*RAP*	$ 35,135	17	Jan.	31	Interest	*J*	$ 210	00
	31	Administrative expense (accounts payable)	*RAP*	33,663	30			Balance		71,188	47
	31	Interest	*J*	600	00						
	31	Bad debts (accounts receivable)	*J*	2,000	00						
				$ 71,398	47					$ 71,398	47
Feb.	1	Balance		$ 71,188	47						

JONES MANUFACTURING COMPANY
TRIAL BALANCE, JANUARY 31, 192__

Account No.							
1	Capital				$100,000	00
2	Surplus				19,452	69
3	Cash	$ 21,793	10			
4	Accounts receivable	17,078	77			
5	Accounts payable				19,612	51
6	Notes receivable	2,130	43			
7	Notes payable				10,848	91
8	Plant account	47,471	05			
9	Reserve for depreciation				4,747	10
10	Reserve for bad debts				2,000	00
11	Work in process	11,173	45			
12	Raw material	75,694	54			
13	Finished stock	19,481	99			
16	Sales A				34,249	10
17	Sales B				59,414	50
18	Sales C				15,084	30
19	Sales D				602	69
20	Selling and administrative Expenses	71,188	47			
	Total	$266,011	80		$266,011	80

FIG. 20

JONES MANUFACTURING COMPANY
BALANCE SHEET, JANUARY 31, 192__

ASSETS				
Current Assets:				
Cash		$ 21,793	10	
Accounts receivable		17,078	77	
Notes receivable		2,130	43	
Inventories:				
Finished stock	$19,481.99			
Work in process	11,173.45			
Raw material	75,694.54	$ 106,349	98	
Total current assets		$147,352	28	
Property:				
Plant		$ 47,471	05	
Total assets				$194,823 33
LIABILITIES				
Current Liabilities:				
Accounts payable		$ 19,612	51	
Notes payable		10,848	91	
Total current liabilities		$ 30,461	42	
Reserve for depreciation		4,747	10	
Reserve for bad debts		2,000	00	
Capital		100,000	00	
Surplus, Jan. 1, 192__	$19,452.69			
Net profit for January	38,162.12	57,614	81	
Total liabilities				$194,823 33

FIG. 21

JONES MANUFACTURING COMPANY

STATEMENT OF PROFIT AND LOSS

For the Month of January, 192__

Department	Sales		Gross Profit		Expenses						Net Profit	
	Amount	Cost	Amount	Per Cent.	Selling	Per Cent.	Administrative	Per Cent.	Total	Per Cent.	Amount	Per Cent.
A	$ 90,900 00	$ 56,650 90	$ 34,249 10						$17,923 42		$16,325 68	
B	197,450 00	138,035 50	59,414 50						43,660 63		15,753 87	
C	44,550 00	29,465 70	15,084 30						9,320 60		5,763 70	
D	1,500 00	897 31	602 69						283 82		318 87	
	$334,400 00	$225,049 41	$109,350 59						$71,188 47		$ 38,162 12	

(See Part 5, Fig. 17)

FIG. 22

INSOLVENT AND DECEDENTS' ESTATES

INSOLVENT ESTATES

GENERAL PROCEDURE

1. When a business concern becomes financially embarrassed and must be wound up for the benefit of the creditors, the affairs are usually settled under the National Bankruptcy Act, though sometimes under the Assignment Act of the state in which the business was conducted; all state assignment and insolvent acts, however, have been superseded by the National Act, and are therefore seldom used. Sometimes a concern gets into difficulties and is unable to realize on assets sufficiently to satisfy persistent creditors, in which case the creditors not infrequently apply to the court for the appointment of a *receiver*, whose duty is to take temporary charge of the concern under the direction of the court and to manage its affairs until it is in condition to be returned to the former management. It will be seen that in any case, whether through the appointment of a receiver or in case of bankruptcy, the business passes from the immediate control of the owners into the hands of some one appointed by the court. This person, whether he be receiver, trustee, or assignee must, of course, take charge of the affairs, render statements to the creditors and to the court, and make accurate record of his activities and business dealings in connection with the concern.

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2. The business affairs of the bankrupt are wound up by the *referee in bankruptcy* with the help of a receiver or a trustee. If, at the time of adjudication, the business is to be immediately wound up a *trustee in bankruptcy* is appointed to do so under the direction of the referee, but in case the business is to be continued for a time with the hope of realizing greater returns for the creditors, a receiver is appointed to conduct the business. In any case, it is the duty of the officer conducting the proceedings to realize the greatest possible returns in the interests of the creditors.

3. In bankruptcy proceedings, the services of accountants are often sought, and the accountant's success in the work will depend largely on his ability to discover the reasons for failure and the conditions as they exist. He must be able also to determine what things should be on the books that are omitted, either intentionally or otherwise. In this line of investigations, the ingenuity of the officer or the accountant is often taxed to the extreme in his efforts to detect the sharp practices of the bankrupt.

When the affairs of the bankrupt are investigated and determined, their details are usually summarized or set forth in some form of statement similar to statement of affairs which is explained later. In addition to this, a schedule of assets and liabilities, as required by law, is to be made out and accompanied by the affidavit of the petitioner.

In making a study of bankruptcy, it is advisable to consult the National Bankruptcy Act, a copy of which can be had by writing to the Public Printer, Washington, D. C. In addition to the act, it contains copies of the official blanks and schedules used in settling up the affairs of bankrupts.

PETITIONER'S SCHEDULES

4. The person petitioning for adjudication as a bankrupt must present a set of schedules setting forth all of his assets, liabilities, etc., as has already been stated. These schedules are presented to the United States District Court in forms, known as **debtor's petitions,** that are uniform throughout the

different states. In the debtor's petition, the debtor makes statement under oath that he is unable to meet his obligations and asks to be declared a bankrupt. This petition is divided into two schedules, which are further divided, and contains a summary of debts and assets, as is shown in the following articles:

5. Schedule A.—Statement of all debts of bankrupt. This schedule is subdivided into:

Schedule A–1.—Statement of all creditors who are to be paid in full or to whom priority is secured by the law, as wages, taxes, or other claims due to the state or the United States.

Schedule A–2.—Creditors holding securities, with full particulars as to the amount of debts, value of securities, etc.

Schedule A–3.—Creditors whose claims are unsecured, with name and residence of each person concerned. This schedule must be stated in full, with the amount due to each and all other particulars pertaining to same, and any claim by way of set-off stated in the schedule of property.

Schedule A–4.—Liabilities on notes or bills discounted, which ought to be paid by the drawers, makers, acceptors, or endorsers, with full particulars as to names, residences, and occupations of the persons concerned therein.

Schedule A–5.—Accommodation paper, with amounts, dates, names, and residences of all parties concerned therein, and full particulars, with references to said obligations.

Oath to Schedule A.—Following schedule A–5 is the oath of the petitioner as to accuracy of schedule A.

6. Schedule B.—Statement of all property of bankrupt, containing full particulars thereof and detailed lists of everything concerned therein under the following sub-sections:

Schedule B–1.—Real estate, with estimated value, location of same, encumbrances thereon, and other particulars relating thereto.

Schedule B–2.—Personal property, containing a detailed list of all personal property and chattels held by the petitioner.

Schedule B–3.—Choses in action, containing detailed list of debts on open accounts, securities, insurance policies, etc.

Schedule B–4.—Property in reversion, remainder, or expectancy, including property held in trust for the debtor or subject to any power or right to dispose of or to charge.

Schedule B–5.—A particular statement of the property claimed as exempted from the portion of the acts of congress relating to bankruptcy, giving each item of property and its valuation; and, if any portion of it is real estate, its location, description, and present use. Exemptions.

Schedule B–6.—Books, papers, deeds, and writings relating to bankrupt's business and estate, held either by himself or by some one else in trust.

Oath to Schedule B.—Attached to the preceding schedules is the oath of the petitioner certifying to its accuracy.

7. Summary of Debts and Assets.—The schedule or summary of debts and assets is made up from the information and details given in schedules A and B and their subschedules. It contains a summary of all assets and liabilities.

STATEMENT OF AFFAIRS AND DEFICIENCY ACCOUNT

8. From the information submitted in the preceding schedules, as well as from any other source obtainable, the assignee, the trustee, or the receiver prepares a statement known as a *statement of affairs*, showing the condition of the bankrupt. This statement may of course be prepared by an accountant or by some other person sufficiently capable of compiling the required data.

A **statement of affairs** is an exhibit somewhat similar to a balance sheet, and is prepared for the information of the creditors of an insolvent estate. It contains on one side all the liabilities, distinguishing between those which are unsecured, partly secured, or fully secured; the preferred claims also are clearly set forth on the same side of the statement. On the opposite side, the assets of the concern are shown at their book value and also at the value at which they are expected to realize; any assets that have been given over as securities to creditors are shown distinct from those which are available

for distribution among the unsecured creditors. The difference between the two sides of the statement shows either the nominal net surplus or the nominal net deficiency and it is transferred to a special account known as the *deficiency account*. Contingent liabilities also should be shown in the statement of affairs and the expected loss thereon indicated.

9. The **deficiency account** shows on one side the net deficiency, as transferred from the statement of affairs, together with the capital accounts of the partners and the profits made on the business since its commencement or since a date on which the books show it to have been in a sound condition; on the opposite side are shown the loss incurred in realizing on the assets, the drawings by partners, and losses not otherwise provided for in the statement.

Deficit, in a commercial and financial sense, means shortage—the amount we lack or fall short of being solvent. Deficiency is therefore the state of being deficient or impaired, and deficiency account is a separate account or statement prepared only in connection with the process of winding up insolvent estates, and is extracted from a statement of affairs or condition as made up by the receiver. Such an account can be constructed in this way so as to show just how the deficiency occurred.

10. Illustration of Statement of Affairs and Deficiency Account.—The statement of affairs and the deficiency account can best be illustrated by means of a problem. Thus, assume that Adam Smith and Thomas Gray have been in business as contractors for the last 6 years. Each invested $63,000 cash and was to receive one-half of the gain or to bear half of the losses, which were as follows for the entire period:

Year	
1909, gain	$15,000.00
1910, gain	18,000.00
1911, gain	21,852.00
1912, gain	1,500.00
1913, loss	1,500.00
1914, loss	3,000.00

Each withdrew from the business for private use $6,000 per year. On December 31, 1914, an assignment was made, and the assignee obtained the following information in addition to that already given, from which to make a statement of affairs and a deficiency account to be placed before the creditors.

Unsecured creditors on open account	$ 27,000.00
Fully secured creditors	6,900.00
Securities held by above consist of patents, valued at	9,000.00
Partly secured creditors	105,000.00
Securities held by above consist of railway shares, valued at	60,000.00
Wages due	2,000.00
Rent due	400.00
Bills payable	60,000.00
Book debts (good)	3,000.00
Book debts (doubtful) $600 estimated worth	225.00
Book debts (bad) of no value	900.00
Stock in trade at Cleveland, Detroit, and Chicago	112,500.00
Above is estimated to be worth	66,600.00
Plant and machinery cost	120,000.00
Above estimated to produce	60,000.00
Office furniture, $900; estimated worth	600.00
Notes receivable under discount	10,000.00
Estimated liability of estate on above	4,000.00
Cash in bank	252.00

11. From the preceding facts the assignee made the statement of affairs shown in Fig. 1 and, to accompany it, the deficiency account shown in Fig. 2.

12. Comments on Statement of Affairs.—A study of Fig. 1 will no doubt make the statement of affairs clear. It will be seen that the assets are listed first at the book value as they stand on the ledger, and then at the price they are estimated to bring at forced sale. Of course, they may not bring the prices expected, but that can be taken care of in the

STATEMENT OF AFFAIRS, DECEMBER 31, 1914

ASSETS

		Book Value	*Estimated to Realize*
Cash in bank		$ 252.00	$ 252.00
Office furniture		900.00	600.00
Plant and machinery		120,000.00	60,000.00
Book debts:			
Good		3,000.00	3,000.00
Doubtful		600.00	225.00
Bad		900.00	
Stock in trade consisting of material and supplies in Cleveland, Detroit, and Chicago as per schedules		112,500.00	66,600.00
Railway shares:			
Estimated value	$ 60,000.00	60,000.00	
Assigned as security for	105,000.00		
Balance as per contra	45,000.00		
Patents, estimated as worth	9,000.00	9,000.00	
Assigned to creditors as security for	6,900.00		
Surplus			2,100.00
		$307,152.00	$132,777.00
Deduct preferred creditors as per contra			2,400.00
Assets available for dividend			130,377.00
Equivalent to a dividend of 95.8 per cent. on claims of $136,000, exclusive of expenses of realization.			
Deficiency			5,623.00
			$136,000.00

LIABILITIES

		Gross Liabilities	*Expected to Rank*
Ordinary unsecured creditors:			
On open account		$ 27,000.00	$ 27,000.00
On bills payable		60,000.00	60,000.00
		87,000.00	87,000.00
Fully secured creditors	$ 6,900.00	6,900.00	
Estimated value of securities	9,000.00		
Surplus to contra	2,100.00		
Partly secured creditors	105,000.00	105,000.00	
Estimated value of securities	60,000.00		
			45,000.00
Contingent liabilities:			
Notes under discount $10,000, of which it is estimated $4,000 will rank against estate for dividend		4,000.00	4,000.00
Preferred creditors:			
Wages	2,000.00		
Rent	400.00		
		2,400.00	
Deduct from contra	2,400.00		
		$205,300.00	
			$136,000.00

FIG. 1

final settlement. Some of the assets have been assigned to creditors as security for amounts owing and therefore cannot be included in the salable assets; in case the security is more than enough to meet the claim for which it is assigned, the excess is returned and must be included among the general assets that now belong to the general unsecured creditors.

DEFICIENCY ACCOUNT

DEBIT

Loss from shrinkage in assets as per statement of affairs:			
Office furniture		$ 300.00	
Plant and machinery		60,000.00	
Book debts		1,275.00	
Stock in trade		45,900.00	
			$107,475.00
Loss on notes discounted			4,000.00
Drawings by partners:			
Smith, $6,000 per year for 6 years		36,000.00	
Gray, $6,000 per year for 6 years		36,000.00	
			72,000.00
			$183,475.00

CREDIT

Capital invested Jan. 1, 1909:			
Smith		$ 63,000.00	
Gray		63,000.00	
			$126,000.00
Profits shown by accounts:			
Year 1909		15,000.00	
Year 1910		18,000.00	
Year 1911		21,852.00	
Year 1912		1,500.00	
		56,352.00	
Deduct Losses:			
Year 1913	$ 1,500.00		
Year 1914	3,000.00		
		4,500.00	
			51,852.00
Deficiency as per statement of affairs			5,623.00
			$183,475.00

FIG. 2

Preferred creditors must, of course, be paid first, as is shown by the statement. Liabilities are listed at the book value; these do not shrink, and, if anything, they become increased by the addition of newly found obligations. It will be seen that partly secured creditors can collect in full for only the claims so secured; the balance must rank among the unsecured claims. Even contingent liabilities must be included in case

any portion of them is likely to become actual obligations. As will be seen, the net assets available for distribution to creditors in the form of dividends amounts to $130,377; this is 95.8 per cent. on the amount of claims, which now aggregate $136,000, as is shown in the liabilities column. This leaves a deficit of $5,623 before paying any liquidating expenses, which must necessarily amount to considerable. The fact that the assets are appraised does not mean that they will bring that sum; they may amount to more or to less by the time realization will have been completed. This deficit of $5,623 is analyzed in the deficiency account, Fig. 2.

13. Comments on the Deficiency Account.—The deficiency, as shown by the deficiency account, Fig. 2, is $5,623, the same as is shown by the statement of affairs; the two should of course be in harmony and exhibit like results. This account analyzes the deficit and shows what influences or causes were instrumental in bringing about the present condition. It is evident by the deficit that all the capital, as well as the profits made during the previous 6 years, has been exhausted. As will be observed, the capital invested was $126,000 and the net profits for 6 years amounted to $51,852, making an aggregate of $177,852; all of this amount has disappeared, and $5,623 besides. The object is to determine where it has gone.

On an examination of the debit side of the deficiency account it is found that the partners have overdrawn their profits; their drawings amount to $72,000, while the net profits amounted to only $51,852, so that $20,148 of capital investment was drawn out of the business. But this is not all. There is a loss of $4,000 in notes discounted, and also a shrinkage in assets of $107,475. This shrinkage is, of course, due almost entirely to the necessity of forced sale, and would not be a consideration in a business that is continuing in operation. Perhaps the partners have failed to observe the necessity for allowing for depreciating properties, so that the assets would be lessened in value to some extent anyhow; and yet the natural shrinkage would not be equal to the exhorbitant shrinkage indicated in this case. The firm may have been

embarrassed for the need of ready cash, but omitting the assumed shrinkage in assets its condition does not indicate any immediate cause for alarm; yet, there may have been conditions in connection with the firm's affairs that precipitated the failure and which would not be disclosed by any collection of figures.

TRUSTEES, RECEIVERS, AND ASSIGNEES

14. Trustees are persons having charge of property belonging to some other party or parties; they are generally appointed by the court and are bound by the terms of the trust over which they are to have control. In many instances, executors are authorized by the terms of a will to act as trustees of an estate. The *trustee in bankruptcy* is a person appointed by the court to take charge of, and settle up, the affairs of an insolvent person, firm, or corporation. He is responsible to the court and of course acts at all times in the interests of the creditors for whom he is serving. He receives a commission in payment for his services.

15. Receivers are persons appointed by the court to take charge of property that may be in dispute, as in case of a partnership, where a partner may make application for the appointment of a receiver pending litigation as to the interests of the partners in the property of the partnership. Receivers are also appointed to take charge of the property of a corporation that may be in difficulty as to its financial affairs or otherwise, or perhaps in the interests of certain stockholders or creditors. The appointment of a receiver, however, does not necessarily mean that the company is financially embarrassed, but is done entirely as a precautionary measure. As a rule, the business continues in operation as before, though temporarily under the receiver's direction.

It is the duty of a receiver to make an inventory of all property that may come into his possession under the order of the court making the appointment, and to file this inventory as soon as practicable. The method of his administration is similar to that of an assignee.

16. Assignees are appointed by a party or parties who may make an assignment of their property for the benefit of their creditors. Such assignment is subject to the approval of the court, which will at the same time state the amount of the bond required to be filed with the court, subject to approval thereby. The assignee, after the filing of his bond and the approval thereof, enters into the possession of the assets of the assignor or assignors. It is his duty to prepare an inventory of all property coming into his possession, in which inventory he must give in detail a description of all such property, stating the quantity and estimated value of it, and at the same time giving the nominal or cost value of it. In preparing the inventory, the assignee is not bound to state the actual value of the property, but only its estimated value; therefore, it is better for him not to place too high an estimate on the property, because if the property has to be sold at a value less than the estimated value named in the inventory, it might appear that the assignee had been derelict in his duty and had sacrificed the property to the detriment of the creditors. When the assignee renders his account for adjudication by the court, he is required to state the inventoried value of the property coming into his possession and the amount received by him, as well as the expenses incurred by him in the administration of the assigned property. When receiving his appointment, he is generally instructed by the court as to the nature of his duties, and when in doubt he should consult counsel as to the manner in which he should act. In presenting his accounts for filing in court, they should be presented in schedule form, similar to those presented before the probate court, only the headings should be modified in accordance with the matter to be presented.

REALIZATION AND LIQUIDATION ACCOUNT

17. The account keeping necessary for a receiver or an assignee depends on circumstances, and on whether or not the concern is to be liquidated. In case of liquidation, the business operations cease and the affairs are settled up as rapidly as possible, thus necessitating a minimum amount of bookkeeping.

An inventory is made, of course, of all assets and liabilities, and as these are settled proper entries are made on the inventories. Record should be made in the accounts also, because the books of the concern are usually in the hands of the official having the matter in hand. A cash book is always necessary, and in it should be recorded all receipts and disbursements of cash; also, it is expedient to have an account through which all moneys shall pass. The matter is simple and the book records few, but all records must be clearly and unmistakably stated. In a large concern, the matter is more complicated and frequently requires the services of an expert accountant.

If the receivership is only temporary, no alteration is necessary in the bookkeeping system and the business affairs continue to be transacted as before. The same books and accounts are used and the same routine followed as nearly as possible. Of course, under a receivership, a certain degree of precaution is likely to be exercised; the receiver is acting under court directions and yet very anxious to tide the company over its difficulties and hand it back to the owners in a prosperous and flourishing condition. The receiver has an advantage over the directors of a company in that creditors cannot force him to make settlement until the affairs of the company are in condition to justify; and during his incumbency he is permitted to incur, on behalf of the concern, additional obligations, which take precedence over all other liabilities.

18. In the settlement, or winding up, of an insolvent concern, the matter is not so different, though there are frequently met conditions that render matters very annoying and difficult of settlement. All assets must be realized at the best price possible, and the settlement made with creditors after all expenses are liquidated. The manner of doing this is explained in connection with the following description of the **realization and liquidation account,** the functions of which, as its name implies, are to realize on the assets and to liquidate the liabilities of a company that has ceased to be a "going concern."

19. The best way to get a clear understanding of the functions of the realization and liquidation account is to regard

it as an individual. It is first charged with all the assets of a company, and liabilities discharged, except capital stock. Then it is credited with liabilities to be discharged, the amounts realized on the assets, and debited with the costs and charges incident thereto, the balance being carried to capital-stock account. If a loss results, it is charged against the capital, showing the residue available for distribution among the stockholders; if it should possibly be a gain, it is credited to capital, and shows that the stockholders will receive more than their original contribution to the business. The distribution of this (as a dividend would be paid on the basis of shares held) winds up the concern, presuming, of course, that the legal costs of discharge and dissolution have been included in the expense.

The account is debited for the assets because it has received them in trust, and credited for the liabilities because they are offsets to the assets. The sums realized are a credit because so much of the assets have been parted with, and, cash being received for them, cash is debited. Liabilities discharged are a debit because they no longer offset the assets and because cash is credited when they are discharged or paid. Realization expenses, receiver's commission, etc. are debited for the same reason that they have become liabilities in the process of liquidation and are paid out of, and have to be credited to, the cash realized. Thus, assume that a company with a capital of $20,000 has $18,000 worth of assets and trade liabilities amounting to $5,000. Deducting $5,000 from $18,000 it is found that the company has $13,000 net assets against $20,000 capital liability; that is, its capital is impaired by $7,000.

A realization and liquidation account is opened, in which charges and credits are made as follows:

Debit		Credit	
Assets received	$18,000.00	Liabilities to be discharged	$ 5,000.00
Liabilities discharged	5,000.00	Proceeds realized	16,000.00
Liquidation expenses	2,000.00	Loss charged to capital	4,000.00
	$25,000.00		$25,000.00

As will be observed, it cost $4,000 to liquidate—$2,000 in expenses and $2,000 loss in realizing on assets. This $4,000, plus the $7,000 impairment, shows the capital of $20,000 reduced to $9,000. Also, $16,000 was received from the sale of assets, $5,000 was paid to creditors, and the costs were $2,000, leaving $9,000 cash on hand, the amount of the present capital. This $9,000 is now paid back to the stockholders, crediting cash and closing the cash account, and debiting capital stock and closing it also.

20. Illustration of Realization and Liquidation Account.—The following problem and its solution will serve to make clear the realization and liquidation account:

The Fox & Dix Company, a close corporation, became embarrassed through the failure of a friendly company to whom they had given their accommodation paper, and a trustee was appointed February 1, 1913, to take charge of their affairs for the benefit of the creditors. The condition of the estate, when the trustee took charge, was as follows:

LIABILITIES	
Mortgage on real estate, maturing February 1, 1914	$ 15,000.00
Interest, due February 1, 1913, 6 months at 5 per cent	375.00
Taxes due	210.00
Book accounts payable	3,900.00
Bills payable (including accommodation paper, $56,000)	57,400.00
Surplus, per profit-and-loss account	3,987.00
Capital stock	40,000.00
	$120,872.00
ASSETS	
Cash on hand and in bank	$ 650.00
Merchandise (stock of goods)	25,310.00
Book debts (including accommodation account, $56,000)	60,800.00
Bills receivable	4,112.00
Real estate	30,000.00
	$120,872.00

In order to complete contracts and thus realize to the best advantage on the goods in stock, the trustee purchased merchandise to the amount of $50,000, and during the year collected $100,002 cash from sales. The accommodation account was settled for 60 per cent. The other book debts realized $4,100, and the bills receivable $3,600. The balance was lost. The accommodation paper was settled by paying $40,000 cash and renewing $16,000, entailing legal fees, interest, and petty expenses of $2,200. The other bills payable, the accounts payable, the taxes, and the interest on mortgage for 18 months were paid in course of settlement and the principal of the mortgage was paid off at maturity. The running expenses were as follows: Clerk hire, $1,500; office expenses, $1,000; allowances to officers, $3,000; trustees' commissions, $3,000. On February 1, 1914, the trustee surrendered charge of the company's offices and paid over the cash balances in his hands. On this date there were also uncollected book debts of $2,000 and a merchandise stock of $8,000.

REALIZATION AND LIQUIDATION ACCOUNT OF THE FOX & DIX COMPANY AS ON FEBRUARY 1, 1914

ACCOUNT OF ASSETS

To be realized:			Realized:		
Bills receivable		$ 4,112.00	Bills receivable		$ 3,600.00
Accounts receivable		4,800.00	Accounts receivable		4,100.00
Accommodation account		56,000.00	Accommodation account		33,600.00
Merchandise, stock		25,310.00	Cash sales		100,002.00
Real estate		30,000.00	Total		141,302.00
Total		120,222.00	Not realized:		
Supplementary charge:			Merchandise, stock	$ 8,000	
Merchandise purchased		50,000.00	Real estate	30,000	
Balance, credit excess		11,080.00	Accounts receivable	2,000	40,000.00
		$181,302.00			$181,302.00

LIABILITY ACCOUNTS

Liquidated:		To be liquidated:	
Taxes	$ 210.00	Taxes due	$ 210.00
Interest for 6 months	375.00	Interest due for 6 mos.	375.00
Bills payable	1,400.00	Bills payable	1,400.00
Accommodation paper	40,000.00	Accommodation paper	56,000.00
Accounts payable	3,900.00	Accounts payable	3,900.00
Mortgage on real estate	15,000.00	Mortgage on real estate	15,000.00
Total	60,885.00	Total	76,885.00
Not liquidated:			
Accommodation paper renewed	16,000.00		
	$ 76,885.00		$76,885.00

SUMMARY OF REALIZATION AND LIQUIDATION ACCOUNTS

Assets to be realized		$120,222.00	Assets realized including cash sales	$141,302.00
Assets purchased		50,000.00	Assets not realized	40,000.00
Balance, credit excess		11,080.00		181,302.00
		181,302.00		
Liabilities liquidated		60,885.00	Balance	11,080.00
Liabilities not liquidated		16,000.00	Liabilities to liquidate	76,885.00
Supplementary charges:			Balance, loss on realization, carried to capital account	370.00
Expense on accommodation note	$2,200.00			
Interest, 1 year	750.00			
Clerk hire	1,500.00			
Office expenses	1,000.00			
Allowance to officers	3,000.00			
Trustee's commission	3,000.00	11,450.00		
		$88,335.00		$ 88,335.00

TRUSTEE'S CASH ACCOUNT

Receipts:		Payments:	
Amount on hand	$ 650.00	Taxes due	$ 210.00
Cash sales	100,002.00	Bills payable	41,400.00
Bills receivable	3,600.00	Accounts payable	3,900.00
Accounts receivable	37,700.00	Interest on mortgage, 14 mo.	1,125.00
		Mortgage on real estate	15,000.00
		Purchases of merchandise	50,000.00
		Expenses connected with accommodation	2,200.00
		Clerk hire	1,500.00
		Office expenses	1,000.00
		Allowance to officers	3,000.00
		Trustee's commission	3,000.00
		Balance with trustee	19,617.00
	$141,952.00		$141,952.00

BALANCE SHEET

Assets:		Liabilities:		
Cash with trustee	$19,617.00	Credit on notes payable		$16,000.00
Accounts receivable	2,000.00	Capital and surplus	$43,987.00	
Merchandise on hand	8,000.00	Less loss on realization	370.00	
Real estate	30,000.00			43,617.00
	$59,617.00			$59,617.00

From the items given, it is required to prepare a realization and liquidation account, a trustee's cash account, and a balance sheet of the estate at termination of trust.

21. In the solution, the assets and the liabilities are shown separately, with the additions and settlements and amounts

still remaining. A cash account is also made up and a balance sheet at the termination of the trust.

22. Comments on Realization and Liquidation Account.—The settlement just shown may seem complicated; yet by studying it carefully a clear conception of the analysis can be had. The assets and liabilities are shown separately. All the liabilities are paid but $16,000. Assets, other than cash, amounting to $40,000 are yet on hand, to be distributed according to the order of the court. The trustees received in the beginning assets amounting to $120,222 and afterward purchased $50,000 additional; and the assets already disposed of have netted an increase or profit of $11,080. The expenses and charges, however, amount to $11,450, thereby resulting in a loss on the realizing of $370. The cash account exhibits the cash receipts and payments, and the balance sheet shows the condition of the estate at the time when the trustee surrendered charge.

DECEDENTS' ESTATES

TRUSTEES, EXECUTORS, AND ADMINISTRATORS AND THEIR DUTIES

23. The estate of a deceased person is administered and distributed according to the laws of the commonwealth in which the decedent was a resident at the time of death, supplemented by the rules of the court having jurisdiction. There is one exception to this, namely, that real estate not disposed of by will is treated in accordance with the laws of the commonwealth in which it is situated.

The courts that take charge of decedents' estates are called, in some states, *orphans' courts;* in others, *surrogate courts;* and in others, *probate courts.* In Pennsylvania, the term orphans' court is used, and the Register of Wills holds the office of Clerk of the Orphans' Court and has considerable authority over the acts of executors, administrators, and testamentary trustees, though appeals from his rulings may be taken to the orphans'

court. New York and New Jersey have surrogate courts, and the Surrogate has even more authority than the Register of Wills in Pennsylvania.

Every accountant should study carefully the laws governing decedents' estates in the state in which he intends to practice, and also the court regulations in that state. The rules made by the different courts differ as to details, but the general provisions are about the same. They direct those administering estates to file with them certain schedules and detailed reports, in prescribed form, but permit them to do their bookkeeping in their own way.

24. The written directions of any one as to the disposition of his or her estate, after death, is called a **will,** or *testament.* The decedent who has left no will is said to have died *intestate,* and the estate in such a case is distributed according to the intestate law. Even when there is a will, if it fails to dispose of any part of the estate, that part falls under the same law.

25. Any one, except an executor, an administrator, or a guardian, who is named in a will or by other competent authority to carry out the trust provisions of a will is called a **testamentary trustee.** An executor, an administrator, or a guardian may also be a testamentary trustee, when acting in the execution of a trust created by the will that is separate from his or her other duties.

26. An **executor** is one who is named by a testator, in the will, to distribute the estate. More than one may be named, and in such cases they act jointly. In most states they are required to furnish bond for the faithful discharge of their duties, unless this requirement is specifically waived in the will. Usually, they receive, as remuneration for their services, commissions on the total amount of property passing through their hands, both principal and income. The courts do not care to grant large commissions, and they have no schedule of rates, deciding each case on its merits. When the executors have had a great deal of trouble in collecting what belonged

to an estate, they are allowed to charge larger commissions than executors of other estates who have had very little trouble.

27. When a will has been made but no executor named, or the one named fails to qualify, the court appoints an **administrator c.t. a.,** whose duties and responsibilities are exactly the same as an executor's. The letters *c.t.a.* stand for three Latin words, *cum testamento annexo*, which mean, with the will annexed.

If no will can be found, the court appoints an administrator to distribute the estate according to the intestate law. When he fails to complete the duties of his administration, because of death, or for any other reason, an **administrator d.b.n.** is appointed to finish the work. It sometimes happens that after the estate has been distributed and the administrator discharged, other assets are discovered; in such cases, also, the court appoints an administrator d.b.n., usually the old administrator, to distribute the newly discovered property. The letters *d.b.n.* stand for the Latin words, *de bonis non*, which mean, the goods not administered.

In determining whom to appoint, where no executor has been named, the court usually selects the person most interested, provided that person is reasonably well fitted to perform the duties of the office. There may be several applicants for the appointment and much heated discussion before the court or its representative finally decides who is to be the administrator.

28. There is much to be said in favor of selecting *trust companies* to act as executors, administrators. or trustees. One argument advanced against them is that they take no personal interest in the care of the estate; but, on the other hand, it should be remembered that they have in their employ lawyers who make a particular study of this branch of the law, and financiers who are in a position to place the funds entrusted to them safely and to advantage; the company is always there to attend to business, and it does not die.

29. Duties of Testamentary Trustees.—The will indicates what the testamentary trustee is to do. It may be that

part of the estate consists of a going business that the testator desires the trustee to conduct until the happening of a certain event, as for example, the coming of age of the heirs; or, the testator may desire that all or part of the estate be invested and the income paid to a certain person for life, and upon the death of that person, complete ownership of the estate pass to another. In such a case, the person receiving the income is called the *life tenant* and the person to whom the principal is to pass, the *remainder man*. Sometimes the testator directs that a certain part of the estate be set aside for all time, the income to be used to maintain a school or a public institution of some kind.

It would be useless to attempt to enumerate the various kinds of trusts that are created by wills, but the examples given will serve to illustrate the duties that testamentary trustees may be called on to perform. Very often an executor is also named as a testamentary trustee under the same will, and frequently several trustees are named to act jointly.

30. Duties of Executors and Administrators.—It is customary for the executor, as soon as he receives the will, to make an appointment with the family of the deceased, for the purpose of reading the will to them and to other interested persons. After this it should be promptly probated. Probating consists in filing the original document with the court, or in the public office provided for that purpose, in the county where the decedent was a resident at time of death. Before filing, however, it must be proved according to the rules in force in that county.

The executor has no authority until the will is probated and he has formally qualified and is furnished with credentials by the court, termed *letters testamentary*. In case of an administrator, such credentials are called *letters of administration*.

After he has received his authority, he should give public notice of his appointment; file with the court an inventory of the personal property of the estate, which in most states must be appraised by two disinterested appraisers under oath; collect what belongs to the estate; pay the decedent's debts and costs

of administering the estate; pay the collateral inheritance tax, and other taxes; file an account; have his account audited by the court; await the judgment of the court on his account; pay whatever is ordered by the adjudication, file orders for the satisfaction of such awards; and obtain his discharge.

An administrator's duties are the same as an executor's, with the exception that he cannot file a will unless there is one. Sometimes all of these steps are dispensed with, and the property divided without formality, but such a course should never be advised because it is quite likely to cause trouble, particularly if the decedent owed money or if any minors are interested in the estate.

HANDLING OF DECEDENTS' ESTATES

31. Preferred Claims.—The executor or the administrator should be careful in paying out the money of the estate, because some creditors may have claims that should be given preference over others. Claims on an equal footing should receive equal consideration, and if there is not enough to pay all claims in full, any creditor who has failed to receive his proportionate part may secure judgment against the administrator's personal estate for the amount due him.

First of all, the expenses of administering the estate are to be met, and after that the debts are, in most states, divided into the following classes:

First Class.—Funeral expenses of the decedent; medicine and medical attendance during the last illness of the decedent; servants' wages, not exceeding 1 year. If there is not enough in the estate to pay these claims in full, which are preferred above all others, they all share pro rata in the fund to be distributed.

Second Class.—Rents for a period not exceeding 1 year. These include taxes and insurance that were to be paid by the tenant in lieu of rent. This preference is restricted to rent accruing before the death of the decedent. Rent that falls due after his death, under the provisions of a lease, may be apportioned and a preference given to the part accrued at the time of the death.

Third Class.—All other debts except those due the commonwealth.

Fourth Class.—Debts due the commonwealth.

When a preferred creditor accepts a note for his claim, it destroys his preference. Beneficiaries can be considered only after all creditors have been paid, and the administrator, to be on the safe side, should not pay them anything until the court makes the adjudication. If he chooses to make any advances to them without an order of court, it must be at his own risk, unless he secures from them refunding bonds. The difference in the standing of creditors and beneficiaries is also shown in the matter of allowing interest. In a general way, the creditor is entitled to interest on his claim from the date on which it falls due, even if it is unsecured, and payment cannot be demanded until 1 year after the death of the decedent; on the other hand, interest will not start to run on a beneficiary's share of the estate until 1 year after the death of the decedent.

32. Real Estate.—Usually, the executor or the administrator has nothing to do with the real estate, which goes directly to the persons to whom it is left if there is a will, or is distributed to the heirs under the intestate law if there is no will. It sometimes happens, however, that the will directs the executor to sell the realty, and sometimes he is directed to do so by the court, to get money to pay the debts of the decedent when the personalty of the estate is not sufficient for that purpose. In such cases, he must account for it and keep it separate from the personalty.

33. Principal and Income.—The principal, or *corpus*, of the estate comprises the goods and chattels, rights and credits; in other words, everything belonging to the decedent at time of death, except real estate. Income includes all earnings of the principal, but not gains from appreciation. From this it would seem to be a simple matter for the administrator of any estate to credit the proper account, principal or income, for all sums coming into his possession, and in most cases it is so, but occasionally he finds it necessary to consult a lawyer, and sometimes the courts must be called on to decide.

The courts in different localities have decided similar cases differently. For example, the courts of New York and Pennsylvania hold that interest received may be apportioned, that part which was accrued, but not due, at the time of the decedent's death being credited to principal and the remainder going to income; but the courts of Massachusetts and England hold that no property right is transferred until the interest falls due, and that all must be credited to income when it does not fall due until after the death of the decedent.

34. Dividends declared before the death of the decedent, though not received until after, must be credited to principal. Dividends declared after the death of the decedent must be credited to income, even though they are declared from profits earned before the death of the decedent. This rule is very generally accepted, as applied to cash dividends, but in the matter of stock dividends the courts differ.

When an executor, an administrator, or a trustee receives a stock dividend, he must, by inquiry of the company awarding the dividend and by examining its annual reports, discover how much of the surplus of the company has been accumulated since the death of the decedent; and he must see what relation this amount bears to the total stock dividend declared, and credit that proportionate part of the stock dividend received to income and the remainder to principal. This is known as the *Pennsylvania rule*, and is followed in all the states of the United States except Massachusetts and Georgia. It has prevailed in Pennsylvania for more than 60 years and was emphasized by a decision handed down by the supreme court of that state, in the case of Stokes estate, on April 15, 1913, which decision gives in detail the court's interpretation of the law.

35. Profits on contracts entered into by the decedent must be credited to principal, but profits on contracts made by the one administering the estate must go to income.

When part of the principal is invested in bonds purchased at a premium, only the actual interest on the money invested should be credited to income; the balance of the money received at each interest period should be credited to an amortization

reserve, which, at the maturity of the bonds, will equal the difference between the face value of the bonds and the money invested in them. This belongs to principal. For example, if the trustee pays $11,064 for $10,000 par of 5-per-cent. bonds that have 14 years to run, the actual return on the investment will be at the rate of 4 per cent.; therefore, he must credit income $442.56 out of each annual interest payment, and the balance, $57.44, must be credited to an amortization reserve. The courts in some jurisdictions, however, hold against this rule.

36. The income from wasting assets, such as mines, quarries, leaseholds, etc., must not all be credited to income. Part of it must be credited to a depreciation reserve, for the purpose of providing an amount equal at the termination of the trust to the depreciation that has taken place in the asset.

Rights to subscribe to stock must be credited to principal.

Rents and annuities are apportionable in nearly all jurisdictions.

Profits of a partnership are not apportionable. The date that terminates the period for which they are calculated determines whether they belong to principal or to income.

The funeral expenses of the decedent, the court costs for administering the estate, the commissions on the principal, and all expenses incurred in the administration of principal are chargeable to principal, and all expenses connected with the collection of income are chargeable to income.

The cost of repairs to a yacht should be charged to income; but the cost of additions to the boat, which increased its value, should be charged to principal.

Brokerage on original investments of principal must be charged to principal; but brokerage on changes of investments must be charged to income.

The importance of these divisions of receipts and expenses, as between principal and income, is due to the rival claims of the life tenant and the remainderman, as previously explained in connection with the duties of testamentary trustees.

37. Books of Account.—It is preferable to keep the books by double entry, using a ledger, a cash book, and a

journal. Each side of the cash book should have two columns, one for principal and the other for income. The regular form of ledger may be used, but the ordinary journal ruling is better, because with it more space is had for explanations, a very desirable thing when keeping the accounts of decedents' estates. When the real estate, as well as the personal estate, is being administered, it is better to keep a cash book for each.

The journal and cash-book entries and ledger accounts that follow will serve to show how the executors or administrators of an estate may record all the transactions in connection with their administration. The data is taken from the problem that follows.

This problem was one of the questions in a certified public accountant's examination held by the Illinois state board, and two solutions are appended—one according to the requirements of the courts of Michigan and the other to meet the demands of the Pennsylvania courts.

The Michigan laws call for an inheritance tax even where the property passes to the widow and children of the deceased, while the Pennsylvania laws do not. The Pennsylvania law (May 6, 1887) directs that estates, real or personal, situated within that commonwealth, whether the person dying possessed thereof had his home there or not, shall be subject to a tax of 5 per cent. on all the property that passes to any person or corporation, except the father, mother, husband, wife, children, grandchildren, and other lineal decendants born in lawful wedlock, or the daughter-in-law of the decedent. This is called a *collateral inheritance tax*, because it affects only those who take as collaterals, and not those who take as direct descendants of the decedent. Not only the direct descendants, but also the parents, husband or wife, and daughter-in-law are spared.

Although, in the following problem, the executors take charge of the real estate, a separate cash book is not needed because the transactions are so few. There is no rent received and no money paid out for repairs or other expenses; simply the receipt of the property by the executors and its sale are to be recorded. This can be done with the other bookkeeping without danger of causing confusion.

PRACTICAL PROBLEM

38. William Benjamin dies on March 23, 1912, leaving an estate consisting of the following property in charge of his three executors, X, Y, and Z:

Cash in bank			$10,000.00
Accounts receivable, from:			
1. G. & R. McMillan Company, Chicago	$ 2,000.00		
2. C. A. Jacobs, Milwaukee	3,000.00		
3. Sun Oil Company, Oil City, Pa.	1,000.00		
4. Detroit Sugar Company	3,000.00		
5. Lancaster Milling Company, Lancaster, Pa	1,000.00		
6. John R. Lake & Company, Port Huron	4,000.00		
7. Western Brewery Company, Wyandotte	2,000.00		
8. Caswell Iron Company, Midland, Mich	3,000.00		
9. James Sheehan Company, New York	4,000.00		
10. Eastern Knitting Mills, Baltimore	1,000.00		24,000.00
Stocks and bonds:			
1. 100 shares Union Bank, par $100	12,000.00		
2. 40 shares Traders Bank, par 100	12,000.00		
3. $1,000 Chesapeake & Ohio 4's, J. & J	1,050.00		
4. $5,000 Pennsylvania Railroad 6's, M. & N	4,500.00		
5. $10,000 New York Central 3½'s, J. & J	10,450.00		40,000.00
Three parcels of unimproved real estate.			
Three of his heirs are also indebted to him for money loaned:			
Chester Benjamin, Detroit		$5,000.00	
David Benjamin, Detroit		6,000.00	
Ralph Benjamin, Detroit		7,000.00	$18,000.00

The will directs the executors to dispose of the real estate, convert the other assets, and distribute the funds, to wit:

Widow.....One-half
Children, Chester, David, and Ralph, each.....One-sixth

Up to April 30, 1913, the executors collect all the accounts receivable with the exception of items No. 3, No. 6, and No. 10, on which they realized only $4,500, the balance being uncollectible. Bonds No. 3 and No. 5 matured January 1, 1913, and bond No. 4 matured May 1, 1913, and were redeemed at par. Stock No. 2 is sold at $325 and stock No. 1 at $125, both sales taking place on April 15, 1912. The real estate is sold for cash $5,000 and mortgages $10,000. Interest has been received on bank balances $300; accounts receivable $50 and on each of the bonds at the regular interest periods in full. The executors pay the decedent's debts and funeral expenses, $1,000; counsel fees, $500; safe-deposit-box rent, $10; and official expenses incident to collection of income, $500. The executors waive their claim to commissions, but ask for an allowance to cover expenses incurred by them of $75 each. State the executors' first and final account and prepare a statement for the purpose of guiding the court in directing a distribution to be made to the heirs. In preparing these accounts follow closely the form that would be used in actual practice.

39. The first answer to this problem is in accordance with the Michigan regulations and is as follows:

ESTATE OF WILLIAM BENJAMIN, DECEASED

SUMMARY OF INVENTORY

Personal Property:		Appraised Value
Bank deposits	$10,000.00	
Accounts receivable	42,000.00	
Bonds	16,207.17	
Stocks	24,000.00	
		$ 92,207.17
Real estate		15,000.00
Total		$107,207.17

Personal Property:	Inventory	Appraised Value
Bank deposits:		
Commercial National Bank, Detroit	$ 3,000.00	$ 3,000.00
First National Bank, Detroit	4,000.00	4,000.00
National Bank of Commerce, Detroit	3,000.00	3,000.00
Accounts receivable:		
G. & R. McMillan, Chicago	2,000.00	2,000.00
C. A. Jacobs, Milwaukee	3,000.00	3,000.00
Sun Oil Company, Oil City, Pa.	1,000.00	1,000.00
Detroit Sugar Company	3,000.00	3,000.00
Lancaster Milling Company, Lancaster, Pa.	1,000.00	1,000.00
John R. Lake & Company, Port Huron	4,000.00	4,000.00
Western Brewery Company, Wyandotte	2,000.00	2,000.00
Caswell Iron Company, Midland, Mich.	3,000.00	3,000.00
James Sheehan Company, New York	4,000.00	4,000.00
Eastern Knitting Mills, Baltimore	1,000.00	1,000.00
Chester Benjamin, Detroit	5,000.00	5,000.00
David Benjamin, Detroit	6,000.00	6,000.00
Ralph Benjamin, Detroit	7,000.00	7,000.00
Bonds and Stocks:		
Chesapeake & Ohio, issue of January 1, 1890, maturing January 1, 1913, interest 4 per cent., payable semiannually, January 1 and July 1. One bond No. 42 of par value	1,000.00	1,050.00
Accrued interest on preceding bond, January 1 to March 23, 1912	9.11	9.11
Pennsylvania Railroad, issue of May 1, 1900, maturing May 1, 1912, interest 6 per cent., payable semiannually, May 1 and November 1, 1912. Five bonds, Nos. 347, 348, 349, 350, 351, of $1,000 each par value	5,000.00	4,500.00
Accrued interest on preceding bonds, November 1, 1911, to March 23, 1912	118.34	118.34
New York Central, issue of January 1, 1878, maturing January 1, 1913, interest at 3½ per cent., payable semiannually, January and July 1. Ten bonds, Nos. 380 to 389, both inclusive, of $1,000 each, par value	10,000.00	10,450.00
Accrued interest on said bonds, January 1, 1912, to March 23, 1912, 3½ per cent.	79.72	79.72
Union Bank (common), 100 shares of $100 each, par value	10,000.00	12,000.00
Traders Bank (common), 40 shares of $100 each, par value	4,000.00	12,000.00
Total personal property	$82,207.17	$92,207.17

Real Property:	Appraised Value
Fourteenth Avenue property—West side, between Ash and Butternut Streets, lot 26 of out lot 10, Godfrey Farm, Detroit. Vacant	$ 1,000.00
Forest Avenue property—North side, between Lincoln and Trumbull Avenues, lot 200 of out lot 15, Forsyth Farm, Detroit. Vacant	7,000.00
Canfield Avenue property—South side, between Third and Fourth Avenues, lot 62 of out lot 20, Cass Farm, Detroit. Vacant	7,000.00
Total real property	$15,000.00

[Signed] X, Y, and Z,
Executors of the will of William Benjamin, deceased.

State of Michigan
In the Probate Court for the County of Wayne
In the Matter of the Estate of
William Benjamin, Deceased
First and Final Account of
X, Y, and Z, Executors of the Will of Said Deceased,
For period, March 23, 1912, to April 21, 1913

Condensed Statement

X, Y, and Z—Debit

To personal property, as per inventory			$92,207.17
To income, as per cash account			682.83
To real estate—avails of sale of:			
Cash—per cash account following		$ 5,000.00	
Richard Roe mortgage		5,000.00	
Philip Poe mortgage		5,000.00	
		$15,000.00	
To increase of assets:			
Bonds:			
Pennsylvania railroad bonds—			
Excess of proceeds at maturity	$ 5,000.00		
Over appraised value thereof	4,500.00		
		$ 500.00	
Stocks:			
Union Bank, common—			
Excess of proceeds from sale	$12,500.00		

Over appraised value thereof	$12,000.00	$500.00		
Traders' Bank, common—				
Excess of proceeds from sale	$13,000.00			
Over appraised value thereof	12,000.00	$1,000.00	$2,000.00	$109,890.00

X, Y, and Z—Credit

By claims paid			$ 1,000.00	
By expense of administration			1,010.00	
By executor's fees			225.00	
By decrease of assets:				
Bonds:				
Chesapeake & Ohio				
Excess of appraised value	$ 1,050.00			
Over proceeds at maturity	1,000.00	$ 50.00		
New York Central				
Excess of appraised value	$10,450.00			
Over proceeds at maturity	10,000.00	450.00		
Accounts receivable:				
Excess of appraised value	$ 6,000.00			
Over proceeds thereof	4,500.00	1,500.00	2,000.00	
By payment of inheritance tax:				
As per cash account			1,953.10	
By distribution of residue:				
Sarah Benjamin, widow				
Cash, per cash account			$42,827.50	
Richard Roe, mortgage			5,000.00	
Philip Poe, mortgage			5,000.00	
			$52,827.50	
Less inheritance tax paid		1,016.55	51,810.95	
Chester Benjamin, son				
Accounts receivable		$ 5,000.00		
Cash, per cash account		12,609.16		
		$17,609.16		
Less inheritance tax account		312.18	17,296.98	

David Benjamin, son			
Accounts receivable	$ 6,000.00		
Cash, per cash account	11,609.17		
	$17,609.17		
Less inheritance tax paid	312.18	$17,296.99	
Ralph Benjamin, son			
Accounts receivable	$ 7,000.00		
Cash, per cash account	10,609.17		
	$17,609.17		
Less inheritance tax paid	312.19	17,296.98	
Total			$109,890.00

CASH ACCOUNT

Receipts

I. Income:			
Interest on bank balance in Union Trust Company		$ 300.00	
Interest on accounts receivable			
G. & R. McMillan Company, 6 days, 6 per cent.	$ 2.00		
C. A. Jacobs, 12 days, 6 per cent.	6.00		
Caswell Iron Company, 24 days, 6 per cent.	12.00		
Eastern Knitting Mills, 30 days, 6 per cent.	5.00		
J. R. Lake & Company, 30 days, 6 per cent.	20.00		
Sun Oil Company, 30 days, 6 per cent.	5.00	50.00	
Interest on bonds:			
Chesapeake & Ohio, $1,000; interest, March 23, 1912, to January 1, 1913, at 4 per cent.	$ 30.89		
Pennsylvania Railroad, $5,000; interest, March 23, 1912, to May 1, 1912, at 6 per cent.	31.66		
New York Central, $10,000; interest, March 23, 1912, to January 1, 1913, at $3\frac{1}{2}$ per cent.	270.28	332.83	682.83
II. Bank deposits:			
Deposits withdrawn from banks, as follows:			
1912			
April 1—Commercial National Bank		$ 3,000.00	
First National Bank		4,000.00	
National Bank of Commerce		3,000.00	10,000.00

III. Avails of securities:		
Bonds:		
Chesapeake & Ohio		
Accrued interest, January 1, 1912, to March 23, 1913, at 4 per cent.	$ 9.11	
1913		
January 1—Principal of bond No. 42 paid in full	1,000.00	
Pennsylvania Railroad		
Accrued interest, November 1, 1911, to March 23, 1912, at 6 per cent.	118.34	
1912		
May 1—Principal of bonds Nos. 347 to 351, inclusive, 5 at $1,000 each, paid in full	5,000.00	
New York Central		
Accrued interest, January 1, 1912, to March 23, 1912, at 3½ per cent.	79.72	
1913		
January 1—Principal of bonds Nos. 380 to 389, inclusive, 10 at $1,000 each, paid in full	10,000.00	
Stocks:		
Traders Bank, common		
1912		
April 15—40 shares of $100 each par value, sold at $325 per share	13,000.00	
Union Bank, common		
1912		
April 15—100 shares of $100 each par value, sold at $125 per share	12,500.00	$41,707.17
IV. Avails of accounts receivable:		
G. & R. McMillan Company, in full	$ 2,000.00	
C. A. Jacobs, in full	3,000.00	
Detroit Sugar Company, in full	3,000.00	
Lancaster Milling Company, in full	1,000.00	
Western Brewery Company, in full	2,000.00	
Caswell Iron Company, in full	3,000.00	
James Sheehan Company, in full	4,000.00	
Sun Oil Company, account $1,000; settled at 75c. on $1	750.00	
John R. Lake & Company, account $4,000; settled at 75c. on $1	3,000.00	
Eastern Knitting Mills, account $1,000; settled at 75c. on $1	750.00	22,500.00

V. Real estate—avails of sale of

Fourteenth Avenue property:

1913 Lot No. 26 of out lot No. 10,

April 2—Sold to John Smith for $ 1,000.00

Forest Avenue property:

1913. Lot No. 200 of out lot No. 15,

April 2—Sold to Richard Roe for $7,000.00

Down payment of cash 2,000.00 2,000.00

Mortgage for balance $5,000.00

Canfield Avenue property:

1913. Lot No. 62 of out lot No. 20,

April 2—Sold to Philip Poe for $7,000.00

Down payment of cash 2,000.00 2,000.00 5,000.00

Mortgage for balance $5,000.00

Total receipts $79,890.00

Disbursements

I. Claims paid: As allowed by commissioners on claims as shown in their report now on file in this court:

1912

April 1—W. R. Hamilton & Company, funeral expense $ 278.00

April 1—W. D. Hicks, M. D., professional services during last sickness of deceased 132.00

April 1—Susan Smith, nurse 80.00

May 1—Blessed & Son 94.50

May 1—J. L. Hudson Company 42.50

May 1—Partridge & Blackwell 73.00

June 1—Jacob Jacobson 300.00 $ 1,000.00

II. Expense of administration:

1912

July 1—Roe, Doe, Poe & Company, attorneys-at-law, amount in full for legal services and counsel fees $ 500.00

July 1—Union Trust Company, for rent of safe deposit box 10.00

1913

April 21—X, Y, and Z, executors, amount disbursed by executors for salary of bookkeeper, stenographer, office rent, and other expenses incident to closing estate of said deceased 500.00 1,010.00

III. Executors' fees:

April 21—X, Y, and Z, amount in full for services as executors, $75.00 each $ 225.00 225.00

IV. Payment of inheritance tax:			
Michigan state inheritance tax on interests passing:			
Sarah Benjamin, widow	$1,016.55		
Chester Benjamin, son	312.18		
David Benjamin, son	312.18		
Ralph Benjamin, son	312.19	$ 1,953.10	$ 1,953.10
V. Distribution of cash residue:			
Sarah Benjamin, widow		$41,810.95	
Chester Benjamin, son		12,296.98	
David Benjamin, son		11,296.99	
Ralph Benjamin, son		10,296.98	75,701.90
Total disbursements			$79,890.00

Summary

Total cash receipts, as above	$79,890.00
Total cash disbursements, as above	79,890.00
Balance	0.00

[Signed] X, Y, and Z,
Joint Executors of the will of William Benjamin, deceased

40. The second answer to the problem given in Art. 38 is in accordance with the laws of the state of Pennsylvania and is as follows:

JOURNAL

——April 1, 1912——

William Benjamin died March 23, 1912, leaving his estate, both real and personal, in charge of X, Y, and Z, executors, to be converted into cash and distributed as follows:

Sarah Benjamin, widow, one-half
Chester Benjamin, son, one-sixth
David Benjamin, son, one-sixth
Ralph Benjamin, son, one-sixth

——April 1——

Cash	$10,000.00
G. & R. McMillan	2,000.00
C. A. Jacobs	3,000.00
Sun Oil Company	1,000.00
Detroit Sugar Company	3,000.00
Lancaster Milling Company	1,000.00
John R. Lake & Company	4,000.00
Western Brewery Company	2,000.00
Caswell Iron Company	3,000.00
James Sheehan Company	4,000.00
Eastern Knitting Mills	1,000.00

Chester Benjamin		$ 5,000.00	
David Benjamin		6,000.00	
Ralph Benjamin		7,000.00	
Union Bank stock, 100 shares, par 100		12,000.00	
Traders' Bank stock, 40 shares, par 100		12,000.00	
Chesapeake & Ohio bonds, 1,000, 4 per cent., J. & J.		1,050.00	
Pennsylvania Railroad bonds, 5,000, 6 per cent., M. & N.		4,500.00	
New York Central bonds, 10,000, 3½ per cent., J. & J.		10,450.00	
Personal estate			$92,000.00
Being all of the personal property belonging to the estate, as per inventory and appraisement filed this day.			
——April 1——			
Fourteenth Avenue property		1,000.00	
Forrest Avenue property		7,000.00	
Canfield Avenue property		7,000.00	
Real estate			15,000.00
Being all the real property belonging to the estate			
——April 1——			
Accrued interest		207.17	
Personal estate			207.17
Interest accrued to March 23, 1907, on bonds owned by the estate:			
Chesapeake & Ohio bonds, 4 per cent. from January 1, 1912	$ 9.11		
Pennsylvania Railroad bonds, 6 per cent. from November 1, 1911	118.34		
New York Central bonds, 3½ per cent. from January 1, 1912	79.72		
—April 15——			
Traders Bank stock		1,000.00	
Personal estate			1,000.00
Increase in value:			
Stock sold for	13,000.00		
Appraised at	12,000.00		
——April 15——			
Union Bank stock		500.00	
Personal estate			500.00
Increase in value			
Stock sold for	12,500.00		
Appraised at	12,000.00		

	——May 1——		
Pennsylvania Railroad bonds		$ 500.00	
Personal estate			$ 500.00
Increase in value			
Bonds redeemed at par	$5,000.00		
Appraised at	4,500.00		
	1913		
	——Jan. 1——		
Personal estate		50.00	
Chesapeake & Ohio bond			50.00
Decrease in value			
Bond redeemed at par	1,000.00		
Appraised at	1,050.00		
	——Jan. 1——		
Personal estate		450.00	
New York Central bonds			450.00
Decrease in value			
Bonds redeemed at par	10,000.00		
Appraised at	10,450.00		
	——April 2——		
Mortgage on Forrest Avenue property		5,000.00	
Forest Avenue property			5,000.00
Property sold this day for	7,000.00		
Took mortgage for $5,000 and cash for balance			
	——April 2——		
Mortgage on Canfield Avenue property		5,000.00	
Canfield Avenue property			5,000.00
Property sold this day for	7,000.00		
Took mortgage for $5,000 and cash for balance.			
	——April 30——		
Personal estate		1,500.00	
Sun Oil Company			400.00
John R. Lake & Company			600.00
Eastern Knitting Mills			500.00
Portion of accounts receivable found to be uncollectible.			
	——April 30——		
G. & R. McMillan, 6 days at 6 per cent.		2.00	
C. A. Jacobs, 12 days at 6 per cent.		6.00	
Sun Oil Company, 30 days at 6 per cent.		5.00	
John R. Lake & Company, 30 days at 6 per cent.		20.00	

Caswell Iron Company, 24 days at 6 per cent.	$ 12.00	
Eastern Knitting Mills, 30 days at 6 per cent.	5.00	
Interest		$ 50.00
Interest charged on accounts receivable.		
——April 30——		
Income	500.00	
Expense—income		500.00
To transfer expense account.		
——April 30——		
Personal estate	1,225.00	
Expense—principal		1,225.00
To transfer expense account.		
——April 30——		
Interest	682.83	
Income		682.83
To transfer interest account.		
——April 30——		
Sarah Benjamin	10,000.00	
Mortgage on Forest Avenue property		5,000.00
Mortgage on Canfield Avenue property		5,000.00
Mortgages transferred to Sarah Benjamin in making distribution of the estate.		
——April 30——		
Income	182.83	
Distribution		182.83
To close income account into distribution account for distribution.		
——April 30——		
Personal estate	90,472.17	
Distribution		90,472.17
To close personal-estate account into distribution account for distribution.		
——April 30——		
Real estate	15,000.00	
Distribution		15,000.00
To close real-estate account into distribution account for distribution.		
——May 25——		
Distribution	105,655.00	
Sarah Benjamin, widow		52,827.50
Chester Benjamin, son		17,609.17
David Benjamin, son		17,609.17
Ralph Benjamin, son		17,609.16

CASH BOOK

		Cash Dr.	Income	Principal
1912				
Apr.	1	Cash in bank as per inventory and appraisement		$10,000 00
	15	Traders Bank stock sold 40 shares at 325		13,000 00
	15	Union Bank stock, sold 100 shares at 125		12,500 00
May	1	Pennsylvania Railroad bonds, redeemed at par		5,000 00
	1	Accrued interest		118 34
		(6 months' interest received on Pennsylvania Railroad bonds)		
		Interest	$31 66	
Jul.	1	Accrued interest		79 72
		(6 months' interest received on New York Central bonds)		
		Interest	95 28	
	1	Accrued interest		9 11
		(6 months' interest received on Chesapeake & Ohio bonds)		
		Interest	10 89	
1913				
Jan.	1	Interest, 6 months' interest received on Chesapeake & Ohio bonds	20 00	
	1	Interest, 6 months' interest received on New York Central bonds	175 00	
	1	Chesapeake & Ohio bond, bond redeemed at par		1,000 00
	1	New York Central bonds, bonds redeemed at par		10,000 00
Apr.	1	Interest, interest received on bank deposit	300 00	
	2	Fourteenth Avenue property sold to John Smith		1,000 00
	2	Forest Avenue property sold to Richard Roe		2,000 00
	2	Canfield Avenue property sold to Philip Roe		2,000 00
	30	G. & R. McMillan, paid in full, with interest	2 00	2,000 00

CASH BOOK—(*Continued*)

		Cash Dr.	Income	Principal
1913				
Apr.	30	C. A. Jacobs, paid in full with interest	$6 00	$3,000 00
		Sun Oil Company paid on account, with interest	5 00	600 00
		Detroit Sugar Company paid in full		3,000 00
		Lancaster Milling Company paid in full		1,000 00
		John R. Lake & Company paid on account with interest	20 00	3,400 00
		Western Brewery Company paid in full		2,000 00
		Caswell Iron Company paid in full, with interest	12 00	3,000 00
		James Sheehan Company paid in full		4,000 00
		Eastern Knitting Mills, paid on account, with interest	5 00	500 00
			682 83	79,207 17
1913				
Apr.	30	Balance	182 83	77,472 17
		Income cash		182 83
				77,655 00

CASH BOOK—(*Continued*)

		Cash Cr.	Income	Principal
1912				
Apr.	1	W. R. Hamilton & Company, funeral expense		$ 278 00
	1	W. D. Hicks, M.D., professional services during illness of deceased		132 00
	1	Susan Smith, nurse		80 00
May	1	Blessed & Son, debt of deceased		94 50
	1	J. L. Hudson & Company, debt of deceased		42 50

CASH BOOK—(*Continued*)

		Cash Cr.	Income	Principal
1912				
May	1	Partridge & Blackwell, debt of deceased		$ 73 00
Jun.	1	Jacob Jacobson, debt of deceased		300 00
Jul.	1	Roe, Doe, Poe & Co., attorneys-at-law, in full for legal services and counsel fees		500 00
	1	Union Trust Company, rent of safe deposit box		10 00
1913				
Apr.	21	Expenses incidental to collection of income.	$500 00	
	21	Expense, allowance to executors X, Y, and Z in lieu of commissions; $75 each.		225 00
		Balance	182 83	77,472 17
			682 83	79,207 17
1913				
May	25	Sarah Benjamin, final distribution		42,827 50
		Chester Benjamin, final distribution		12,609 17
		David Benjamin, final distribution		11,609 17
		Ralph Benjamin, final distribution		10,609 16
				77,655 00

LEDGER ACCOUNTS

1912		G. & R. McMILLAN	Dr.	Cr
Apr.	1	As per inventory and appraisement	$2,000 00	
1913				
Apr.	30	Interest per above 6 days at 6 per cent.	2 00	
	30	Cash		$2,002 00
			2,002 00	2,002 00

1912		C. A. Jacobs	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$3,000 00	
1913				
Apr.	30	Interest on above 12 days at 6 per cent.	6 00	
	30	Cash		$3,006 00
			3,006 00	3,006 00

1912		Sun Oil Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$1,000 00	
1913				
Apr.	30	Interest on above 30 days at 6 per cent.	5 00	
	30	Cash		$605 00
		Balance charged off		400 00
			1,005 00	1,005 00

1912		Detroit Sugar Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$3,000 00	
1913				
Apr.	30	Cash		$3,000 00

1912		Lancaster Milling Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$1,000 00	
1913				
Apr.	30	Cash		$1,000 00

1912		John R. Lake & Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$4,000 00	
1913				
Apr.	30	Interest on above, 30 days at 6 per cent.	20 00	
	30	Cash		$3,420 00
	30	Balance charged off		600 00
			4,020 00	4,020 00

1912		Western Brewery Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$2,000 00	
1913				
Apr.	30	Cash		$2,000 00

1912		Caswell Iron Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$3,000 00	
1913				
Apr.	30	Interest on above, 24 days at 6 per cent.	12 00	
	30	Cash		$3,012 00
			3,012 00	3,012 00

1912		James Sheehan Company	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$4,000 00	
1913				
Apr.	30	Cash		$4,000 00

1912		Eastern Knitting Mills	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$1,000 00	
1913				
Apr.	30	Interest on above, 30 days at 6 per cent.	5 00	
	30	Cash		$ 505 00
	30	Balance charged off		500 00
			1,005 00	1,005 00

1912		Union Bank Stock	Dr.	Cr.
Apr.	1	As per inventory and appraisement	$12,000 00	
	15	Increase in value. 100 shares par 100. Stock sold for 12,500	500 00	
	15	Cash		$12,500 00
			12,500 00	12,500 00

TRADERS BANK STOCK

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$12,000 00	
	15	Increase in value 40 shares par 100.		
		Stock sold for 13,000.	1,000 00	
	15	Cash		$13,000 00
			13,000 00	13,000 00

CHESAPEAKE & OHIO BONDS

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$1,050 00	
		One bond $1,000, 4 per cent.		
		J. & J.		
1913				
Jan.	1	Decrease in value. Bond re-		
		deemed at par.		$ 50 00
	1	Cash		1,000 00
			1,050 00	1,050 00

PENNSYLVANIA RAILROAD BONDS

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$4,500 00	
		Five bonds $5,000, 5 per cent.		
		M. & N.		
May	1	Increase in value. Bonds re-		
		deemed at par	500 00	
	1	Cash		$5,000 00
			5,000 00	5,000 00

NEW YORK CENTRAL BONDS

1912			Dr.	Cr.
Apr.		As per inventory and appraisement	$10,450 00	
		Ten bonds $10,000, 3½ per		
		cent., J. & J.		
1913				
Jan.	1	Decrease in value. Bonds re-		
		deemed at par		$ 450 00
	1	Cash		10,000 00
			10,450 00	10,450 00

FOURTEENTH AVENUE PROPERTY

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$1,000 00	
		West side, between Ash and Buttonwood Streets, lot No. 26 of out lot No. 10, Godfrey Farm,		
1913		Detroit.		
Apr.	2	Cash		$1,000 00

FOREST AVENUE PROPERTY

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$7,000 00	
		North side, between Lincoln and Trumbull Avenues, lot No. 200 of out lot No. 15, Forsythe		
1913		Farm, Detroit.		
Apr.	2	Mortgage by Richard Roe		$5,000 00
	2	Cash		2,000 00
			7,000 00	7,000 00

CANFIELD AVENUE PROPERTY

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$7,000 00	
		South side, between Third and Fourth Avenues, lot No. 62 of out lot No. 20, Cass Farm,		
1913		Detroit.		
Apr.	2	Mortgage by Philip Poe		$5,000 00
	2	Cash		2,000 00
			7,000 00	7,000 00

ACCRUED INTEREST

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement	$207 17	
		Interest accrued to March 23, 1912, on bonds owned by the estate:		
		Chesapeake & Ohio bond, 4 per cent. from January 1, 1912 9.11		
		Pennsylvania Railroad bonds, 6 per cent. from November 1, 1911 118.34		
		New York Central bonds, 3½ per cent., from January 1, 1912 79.72		
May	1	Cash, Pennsylvania Railroad bonds		$118 34
July	1	Cash, New York Central bonds		79 72
	1	Cash, Chesapeake & Ohio bonds		9 11
			207 17	207 17

REAL ESTATE

1912			Dr.	Cr.
Apr.	1	Fourteenth Avenue property		$ 1,000 00
		Forest Avenue property		7,000 00
		Canfield Avenue property		7,000 00
1913				
Apr.	30	Transferred to distribution account	$15,000 00	
			15,000 00	15,000 00

1912		EXPENSE—PRINCIPAL	Dr.	Cr.
Apr.	1	Cash, W. R. Hamilton & Company, funeral expenses	$ 278 00	
	1	Cash, W. D. Hicks, M. D., professional services during last illness	132 00	
	1	Cash, Susan Smith, nurse	80 00	
Jul.	1	Cash, Roe, Doe, Poe & Co. in full, for legal services and counsel fees	500 00	
	1	Cash, Union Trust Company, for safe-deposit box	10 00	
1913				
Apr.	11	Cash, Allowance to X, Y, and Z, executors, in lieu of commissions	225 00	
Apr.	30	Transfer to personal estate		$1,225 00
			1,225 00	1,225 00

1913		EXPENSE—INCOME	Dr.	Cr.
Apr.	21	Cash. Total expenses incidental to collection of income	$500 00	
	30	Transfer to income		$500 00

1913		MORTGAGE ON FOREST AVENUE PROPERTY	Dr.	Cr.
Apr.	2	Mortgage by Richard Roe as part of purchase price	$5,000 00	
	30	Mortgage transferred to Sarah Benjamin in making distribution of estate		$5,000 00

1913		MORTGAGE ON CANFIELD AVENUE PROPERTY	Dr.	Cr.
Apr.	2	Mortgage by Philip Poe as part of purchase price	$5,000 00	
	30	Mortgage transferred to Sarah Benjamin in making distribution of estate		$5,000 00

PERSONAL ESTATE

1912			Dr.	Cr.
Apr.	1	As per inventory and appraisement		$92,000 00
	1	Accrued interest on bonds Chesapeake & Ohio bond, 4 per cent., January 1, 1912, to March 23, 1912 $ 9.11 Pennsylvania Railroad bonds, 6 per cent., November 1, 1911, to March 23, 1912 118.34 New York Central bonds, 3½ per cent., January 1, 1912, to March 23, 1912 79.72		207 17
	15	Traders Bank stock, excess of selling price to appraised value		1,000 00
	15	Union Bank stock, excess of selling price to appraised value		500 00
May	1	Pennsylvania Railroad bonds, excess of redemption price to appraised value		500 00
	1	Blessed & Son, debt of deceased	$94 50	
	1	J. L. Hudson Company, debt of deceased	42 50	
	1	Partridge & Blackwell, debt of deceased	73 00	
Jun.	1	Jacob Jacobson, debt of deceased	300 00	
1913				
Jan.	1	Chesapeake & Ohio bond, deficiency of appraised value in redemption price	50 00	
	1	New York Central bonds, deficiency of appraised value in redemption price	450 00	
Apr.	30	Accounts receivable charged off as uncollectible:	1,500 00	

1912		PERSONAL ESTATE—(*Continued*)	Dr.	Cr.
Apr.	30	Sun Oil Company $400		
		John R. Lake & Company 600		
		Eastern Knitting Mills 500		
	30	Balance of expense-principal account	$ 1,225 00	
		Balance	90,472 17	
			94,207 17	$94,207 17
		Balance		90,472 17
1913				
Apr.	30	Transferred to distribution account	90,472 17	
			90,472 17	90,472 17

1912		INTEREST	Dr.	Cr.
May	1	Cash, interest on Pennsylvania Railroad bonds		$31 66
Jul.	1	Cash, interest on New York Central bonds		95 28
	1	Cash, interest on Chesapeake & Ohio bonds		10 89
1913				
Jan.	1	Cash, interest on Chesapeake & Ohio bonds		20 00
	1	Cash, interest on New York Central bonds		175 00
Apr.	1	Cash, interest on bank account with Union Trust Company		300 00
	30	Accounts receivable, interest charged:		50 00
		G. & R. McMillan $ 2.00		
		C. A. Jacobs 6.00		
		Sun Oil Company 5.00		
		J. R. Lake & Company 20.00		
		Caswell Iron Company 12.00		
		Eastern Knitting Mills 5.00		
	30	Transferred to income account	$682 83	
			682 83	682 83

1913		INCOME	Dr.	Cr.
Apr.	30	Balance of expense-income account	$500 00	
	30	Balance of interest account		$682 83
		Balance	182 83	
			682 83	682 83
1913				
Apr.	30	Balance		182 83
	30	Transferred to distribution account	182 83	

1913		DISTRIBUTION	Dr.	Cr.
Apr.	30	Balance of income		$ 182 83
	30	Balance of personal estate		90,472 17
	30	Balance of real estate		15,000 00
May	25	Sarah Benjamin, widow, one-half	$52,827 50	
		Chester Benjamin, son, one-sixth	17,609 17	
		David Benjamin, son, one-sixth	17,609 17	
		Ralph Benjamin, son, one-sixth	17,609 16	
			105,655 00	105,655 00

1913		SARAH BENJAMIN	Dr.	Cr.
Apr.	30	Mortgages transferred to Sarah Benjamin in making distribution of the estate	$10,000 00	
May	25	Share in distribution		$52,827 50
	25	Cash	42,827 50	
			52,827 50	52,827 50

1912		CHESTER BENJAMIN	Dr.	Cr.
Apr.	1	As per inventory and appraisement advanced by deceased	$ 5,000 00	
1913				
May	25	Share in distribution		$17,609 17
	25	Cash	12,609 17	
			17,609 17	17,609 17

1912		DAVID BENJAMIN	Dr.	Cr.
Apr.	1	As per inventory and appraisement advanced by deceased	$ 6,000 00	
1913				
May	25	Share in distribution		$17,609 17
		Cash	11,609 17	
			17,609 17	17,609 17

1912		RALPH BENJAMIN	Dr.	Cr.
Apr.	1	As per inventory and appraisement advanced by deceased	$ 7,000 00	
1913				
May	25	Share in distribution		$17,609 16
	25	Cash	10,609 16	
			17,609 16	17,609 16

In Fig. 3 is shown the form of inventory and appraisement required by the laws of the state of Pennsylvania in connection with problems of the kind under discussion. The back of this kind of form is shown in Fig. 4.

CITY AND COUNTY } ss.
OF PHILADELPHIA }

PERSONALLY CAME BEFORE ME, Register of Wills, in and for said City and County _____ who upon their solemn _____ did say that at the request of the _____ they _____ "well and truly, and without prejudice or partiality, value and appraise the Goods and Chattels, Rights and Credits," which were of _____ _____ deceased, "and in all respects perform their duties as appraisers to the best of their skill and judgment."

_____ and subscribed this _____ } _____
day of _____ 191__, before me } _____

_____
Deputy Register

INVENTORY AND APPRAISEMENT of the Goods and Chattels, Rights and Credits which were of William Benjamin late of Philadelphia, taken and made in conformity with the above deposition.

Cash in Union Trust Company		$10,000 00
Accounts receivable as follows:		24,000 00
G. & R. McMillan	$ 2,000 00	
C. A. Jacobs	3,000 00	
Sun Oil Company	1,000 00	
Detroit Sugar Company	3,000 00	
Lancaster Milling Company	1,000 00	
John R. Lake & Company	4,000 00	
Western Brewery Company	2,000 00	
Caswell Iron Company	3,000 00	
James Sheehan Company	4,000 00	
Eastern Knitting Mills	1,000 00	
Advanced to heirs		18,000 00
Chester Benjamin	$5,000 00	
David Benjamin	6,000 00	
Ralph Benjamin	7,000 00	
Stocks and bonds		40,000 00
Union Bank Stock, 100 shares, par 100	$12,000 00	
Traders' Bank stock, 40 shares, par 100	12,000 00	
Chesapeake & Ohio bond, No. 42—$1,000—4 per cent., J. & J., January 1, 1890, to January 1, 1913	1,050.00	
Pennsylvania Railroad bonds, Nos. 347, 348, 349, 350, 351, $5,000—6 per cent. M. & N., May 1, 1900, to May 1, 1912	4,500 00	
New York Central bonds, Nos. 380 to 389, inclusive, $10,000—3½ per cent., J. & J., January 1, 1878, to January 1, 1913	10,450 00	
Total personal estate		$92,000 00

FIG. 3

No. _____ 191___

ESTATE OF

_____

Dec'd

_____

INVENTORY AND APPRAISEMENT

Filed _____ 191___

_____

_____

Book_____

Page_____

_____

Attorney

FIG. 4

Following is the first and final account as made out by the executors and filed with the orphans' court:

In the Orphans Court for the City and County of Philadelphia

ESTATE OF WILLIAM BENJAMIN, DECEASED

October Term, 1913 No. 483

First and Final Account of X, Y, and Z, Executors

Debit

The accountants charge themselves with principal received as follows:

1912					
Apr.	1	To amount of inventory and appraisement			$92,000.00
	1	To accrued interest on bonds			207.17
		Chesapeake & Ohio bond, 4 per cent., January 1, 1912, to March 23, 1912		$ 9.11	
		Pennsylvania Railroad bonds, 6 per cent., November 1, 1911, to March 23, 1912		118.34	
		New York Central bonds, 3½ per cent., January 1, 1912, to March 23, 1912		79.72	
	15	To gain on sale of stock			1,500.00
		Traders' Bank stock, 40 shares, par 100			
		Sold for	$13,000.00		
		Appraised at	12,000.00		
		Gain		$1,000.00	
		Union Bank stock, 100 shares, par 100			
		Sold for	$12,500.00		
		Appraised at	12,000.00		
		Gain		500.00	
					500.00
May	1	To gain on bonds redeemed			
		To Pennsylvania Railroad bonds redeemed at par	5,000.00		
		Appraised at	4,500.00		
		Gain		500.00	
		Total			$94,207.17

Credit

The accountants claim credit as follows:

1912			
Apr.	1	By cash paid W. R. Hamilton & Company, funeral expenses of decedent	$ 278.00
	1	By cash paid W. D. Hicks, M. D., for professional services to decedent	132.00
	1	By cash paid Susan Smith, nurse, for services to decedent	80.00

1912					
May	1	By cash paid Blessed & Son, in full settlement of their claim against decedent			$ 94.50
	1	By cash paid J. L. Hudson Company, in full settlement of their claim against decedent			42.50
	1	By cash paid Partridge & Blackwell, in full settlement of their claim against decedent			73.00
June	1	By cash paid Jacob Jacobson, in full settlement of his claim against decedent			300.00
July	1	By cash paid Roe, Doe, Poe & Company, for legal services and counsel fees			500.00
	1	By cash paid Union Trust Company, for rent of safe-deposit box			10.00
1913					
Apr.	21	By cash paid X, Y, and Z, executors, in lieu of commissions			225.00
		X		$ 75.00	
		Y		75.00	
		Z		75.00	
Jan.	1	By loss on bonds redeemed			500.00
		Chesapeake & Ohio bond redeemed at par	$ 1,000.00		
		Appraised at	1,050.00	50.00	
		New York Central bonds redeemed at par	10,000.00		
		Appraised at	10,450.00	450.00	
Apr.	30	By accounts receivable charged off as uncollectible			1,500.00
		Sun Oil Company owed	1,000.00		
		Sun Oil Company paid	600.00		
		Uncollectible		400.00	
		John R. Lake & Company owed	4,000.00		
		John R. Lake & Company paid	3,400.00		
		Uncollectible		600.00	
		Eastern Knitting Mills owed	1,000.00		
		Eastern Knitting Mills paid	500.00		
		Uncollectible		500,00	
		Balance			90,472.17
		Total			$94,207.17

To balance as above, composed as follows:		
Advances to heirs, by decedent:		$18,000.00
Chester Benjamin, son	$ 5,000.00	
David Benjamin, son	6,000.00	
Ralph Benjamin, son	7,000.00	
Cash in Union Trust Company		72,472.17
Total		$90,472.17

The accountants claim credit in distribution as follows:

Advances to heirs, as above	$18,000.00
Balance for distribution	72,472.17
	$90,472.17

Debit

The accountants charge themselves with income received as follows:

1912				
May	1	To interest on Pennsylvania Railroad 6's, $5,000, from March 23, 1912, to May 1, 1912		$ 31.66
July	1	To interest on New York Central 3½'s, $10,000, from March 23, 1912, to July 1, 1912		95.28
July	1	To interest on Chesapeake & Ohio 4's, $1,000, from March 23, 1912, to July 1, 1912		10.89
1913				
Jan.	1	To interest on Chesapeake & Ohio 4's, $1,000, from July 1, 1912, to January 1, 1913		20.00
Jan.	1	To interest on New York Central 3½'s, $10,000, from July 1, 1912, to January 1, 1913		175.00
Apr.	1	To interest on bank account with Union Trust Company, from April 1, 1912, to April 1, 1913		300.00
Apr.	30	To interest charged on accounts receivable at 6 per cent. as follows:		50.00
		G. & R. McMillan, 6 days	$ 2.00	
		C. A. Jacobs, 12 days	6.00	
		Sun Oil Company, 30 days	5.00	
		J. R. Lake & Company, 30 days	20.00	
		Caswell Iron Company, 24 days	12.00	
		Eastern Knitting Mills, 30 days	5.00	
		Total		$ 682.83

Credit

The accountants claim credit as follows:

Expenses incidental to collection of income (should be in detail)	$ 500.00
Balance for distribution	182.83
Total	$ 682.83

Debit

The accountants charge themselves with real estate principal received as follows:

Fourteenth Avenue property, West Side, between Ash and Butternut Streets, lot 26 of out lot 10, Godfrey Farm, Detroit, vacant	$ 1,000.00
Forest Avenue property, North Side, between Lincoln and Trumbull Avenues, lot 200 of out lot 15, Forsythe Farm, Detroit. Vacant.	7,000.00
Canfield Avenue property, South Side, between Third and Fourth Avenues, lot 62 of out lot 20, Cass Farm, Detroit. Vacant.	7,000.00
Total	$15,000.00

Credit

The accountants claim credit as follows:	
(This section is not needed in reporting this estate and is entered only to show how it would be used if, for example, there had been a loss on the sale of the real estate.)	0000.00
Balance for distribution	15,000.00
Total	$15,000.00
To balance as above composed, as follows:	
Mortgage on Forest Avenue property	$ 5,000.00
Mortgage on Canfield Avenue property	5,000.00
Cash in Union Trust Company	5,000.00
Total	$15,000.00
The accountants claim credit in distribution of real estate as follows:	
Mortgages as above transferred to Sarah Benjamin, widow	$10,000.00
Balance for distribution	5,000.00
	$15,000.00

Recapitulation

Balance as per principal account	$ 90,472.17
Balance as per income account	182.83
Balance as per real-estate account	15,000.00
Total	$105,655.00

[Signed] X, Y, and Z, Executors

STATE OF PENNSYLVANIA }
COUNTY OF PHILADELPHIA } ss:

X, Y, and Z, the executors, being duly affirmed according to law, do affirm and say that the foregoing account is just and true both as to items of charge and discharge.

Affirmed and subscribed before me this second day of May, A. D., 1913. [Signed] X, Y, and Z

[Notary's seal, signature, etc.]

The court receives the preceding report, with accompanying vouchers, audits it, and issues an order for distribution. The executor makes the distribution as directed and then files with the court his schedule of distribution and the receipts of the beneficiaries.

The schedule in this case would show the following:

Beneficiaries	Share	Previously Distributed	Final Payment	Total
Sarah Benjamin, widow .	$\frac{1}{2}$	$10,000.00	$42,827.50	$ 52,827.50
Chester Benjamin, son ..	$\frac{1}{6}$	5,000.00	12,609.17	17,609.17
David Benjamin, son ...	$\frac{1}{6}$	6,000.00	11,609.17	17,609.17
Ralph Benjamin, son....	$\frac{1}{6}$	7,000.00	10,609.16	17,609.16
		$28,000.00	$77,655.00	$105,655.00

Attention is called to the fact that in the large majority of cases executor's reports do not mention real estate, but in this case, as the will directs the executors to convert everything belonging to the estate, both real and personal, into cash, and then to divide this fund among the four beneficiaries, the form used above is proper.

ANALYSIS OF ACCOUNTS
(PART 1)

ACCOUNTANCY TERMS

GENERAL DISCUSSION OF ACCOUNTANCY

1. **Accountancy,** or *accounting*, is the work or art of recording, classifying, comparing, and scientifically analyzing business transactions and accounts. It comprehends the arrangement of accountancy systems in such a way as to exhibit the correlated facts, details, results, and true conditions of any business and the exhibition thereof in terms that will provide the management of a concern with such information as is necessary for successful administration. Accountancy is much more comprehensive than bookkeeping and auditing. In fact, it includes both of these branches of cost keeping as well as system building and investigations, just as much as mathematics embraces such subjects as algebra, geometry, and arithmetic. Bookkeeping is simply the art of recording business transactions in a regular and systematic manner according to some prearranged scheme, or plan; and auditing consists merely in making an examination of the accounts, vouchers, records, and statements of a business to determine whether or not the books have been kept properly and accurately, the principal object being to assure the proprietor of a concern that the books are correct, as well to prevent or to detect errors or defalcations

2. The accountant's work is different from either the bookkeeper's or the auditor's. The bookkeeper's work is mainly

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clerical, being performed usually according to routine. The auditor's duties are to oversee. He must verify the work of the bookkeeper and see that the books are kept correctly; also, he must see that the accounts contain no errors of omission or commission, nor of a clerical nature, as well as see that the assets, liabilities, and capital as set forth in the balance sheet are correctly stated and that the income and expenditures are correct and according to the books.

The accountant's work is creative, analytical, and exhaustive. He must be able to devise systems of record and account that will give the greatest amount of detailed information regarding any particular business that he is called upon to systematize, and must do this with the smallest possible expenditure of labor and time. He must necessarily be quick to apprehend; his varied career and diversified work necessitate ability, foresight, persistence, and patience. Indeed, the work of the accountant brings him in touch with all lines of business activity and he therefore soon comes to have a clear knowledge of business, finance, banking, and manufacturing. It is not sufficient that he should know something of a manufacturing establishment and its accounting system, but he should be familiar with the nature of the work done therein and the processes through which the article must go before it becomes the finished product. The broader his general knowledge, the more successful will he be as an accountant and system builder. Although some accountants specialize in certain lines, such as factory systems, banking, transportation, etc., the majority of accountants prefer to accept appointments in any line of activity, thus necessitating a broad knowledge of affairs. He is frequently called on to make audits and to conduct special examinations for the purpose of detecting alleged fraud, or to make reports to intending purchasers, etc. All this goes to show how broad and far-reaching the accounting profession is.

The accountant, the bookkeeper, and the auditor may be likened to the doctor, the patient, and the nurse. The accountant (doctor) arranges the books and prescribes what is to be done, the bookkeeper (patient) follows the prescription keeping the records, while the auditor (nurse) sees that those records

are kept correctly and that the accountant's orders are carried out. If the orders are not carried out, it may be necessary to consult the accountant again. The accountant must necessarily have been a bookkeeper, and usually is an auditor as well; but the auditor is not always an accountant. This may be due to the fact that the office he fills requires special duties only for which he is qualified, or possibly to the fact that he has secured the appointment through influence or favoritism.

DEFINITIONS AND CLASSIFICATION OF ACCOUNTS AND ACCOUNTANCY TERMS

3. An **account** is an itemized record of debits and credits under one heading in a ledger. All items affecting any particular account are contained under that heading.

4. The accounts of any business are divided into two general classes, namely, *real accounts* and *nominal accounts*. **Real accounts** are those which represent assets (resources) and liabilities, such as personal accounts, property accounts, securities, and written obligations receivable and payable. **Nominal accounts** are those which represent gains and losses (income and expenditure) of a business, as sales and other income, salaries, expenses, rents, interest, etc. All accounts belonging to this class are closed at stated periods into the profit-and-loss account. Some accountants make three divisions of accounts, consisting of *capital accounts*, *real accounts*, and *nominal accounts*, on the ground that the capital accounts do not constitute a liability and that they represent only the proprietary interest in the business.

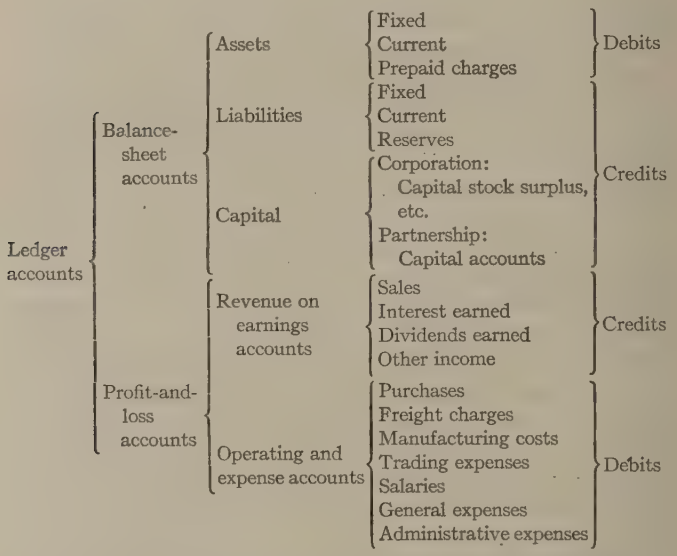
Although it is true that the terms real and nominal do not seem clear as to meaning, yet they are generally in use and are therefore considered authoritative. The real accounts are known also as the *balance-sheet*, or *financial, accounts;* and the nominal accounts are known as the *business*, or *revenue, accounts*, and as the *profit-and-loss accounts*.

Business transactions that affect nominal accounts, such as the sale of goods or the payment of rent, produce either a profit

or a loss and thereby indirectly cause a corresponding increase or decrease in capital. Entries affecting only the real accounts (for instance the payment of a note or a debt) do not change the revenue or the capital in any way. The payment of a debt by a firm, for example, reduces both assets and liabilities to the same extent, while a payment to the firm simply changes the nature of an asset by substituting cash for a promise.

The accompanying diagram shows the classification of ledger accounts.

CLASSIFICATION OF LEDGER ACCOUNTS



5. Personal accounts are all accounts with individuals, firms, or corporations; **impersonal accounts** are all accounts other than personal, such as property, income, expenses, etc. Included under these accounts are the following:

Accounts receivable, or accounts due from customers, debtors to whom goods have been sold. They include the aggregate of outstanding accounts receivable standing on the books at any time. These are often, though wrongly, called sundry debtors.

Accounts payable, which include all accounts due to creditors from whom goods are purchased; often, though wrongly, called sundry creditors.

Sundry debtors, which include accounts due from debtors other than merchandise customers, as advances to officers and employes on account of salary, expenses in hands of travelers unaccounted for, and other debit accounts not strictly accounts receivable. These accounts should be kept in the concluding part of the general or private ledger, either in separate accounts or in one general account headed Sundry Debtors.

Sundry creditors, the opposite of sundry debtors, may include also creditors from whom we purchase various properties other than goods, as furniture, advertising, contracts, and expense bills of various kinds. If such bills are numerous, they may have a separate ledger, but since they are usually only temporary they should be handled as explained under sundry debtors. Sometimes, however, they are not entered on the books until paid for in cash.

6. Negative accounts are accounts that are directly the opposite, or negative, of other accounts. The withdrawals of the proprietor are negative to his capital account; and, in a like manner, returned goods are negative to sales, as they tend to reduce the amount sold. Reserves are negatives to property accounts.

7. Mutual accounts are accounts kept between firms, each of which both buys from and sells to the other, thereby necessitating accounts in both sales and purchase ledgers.

8. Current, or running accounts contain a series of debits and credits and are adjusted or settled at intervals. They are the opposite of transient accounts, as they record the continuous dealings of customers with the corresponding credits, etc.

9. A **stated account** is one that has been rendered to a debtor and accepted by him as correct. In other words, the account has been submitted or stated by the person rendering it.

10. The **capital account** represents the net amount that the proprietor has invested in the business. It is sometimes known as his investment account or even as his stock account. When two or more persons are interested in the business, a capital account, as well as a private account, should be opened for each. The capital of the proprietor may be determined by deducting the total liabilities owing to the public from the total assets. The capital of a corporation is known as *capital stock*.

11. The **proprietor's private account** contains all withdrawals made by the proprietor, and it may also contain any credits that occur, such as salary, interest on investment, etc. This account may also be credited with the net profits of the business, or charged with the net loss. When this plan is followed, the private account shows the amount due to or from the proprietor and subject to his disposition, while the investment account remains intact and exhibits at all times his investment in the business. The investment account may be increased when desired by additional investments, or by carrying to it all or part of the profits from the private account. It is known also as a *drawing account* and as a *personal account*.

12. The **loan account** may consist of loans made to or by the business to the proprietor or partner, and usually remains open until payment is made. This applies also to corporations.

13. The **suspense account** contains record of items held in abeyance for the want of further information. For instance, cash received through the mails without containing the name of the sender would be credited to the suspense account until sufficient information could be obtained for its proper disposition. It is sometimes used for exhibiting doubtful accounts, for over and shortage of cash, etc. In case the cash account is subject to fluctuations by excesses or shortages, such fluctuations are adjusted into an account called *over and short*, or *excess and deficiency*. All such suspended items not accounted for after a reasonable length of time should be closed off into the profit-and-loss account.

14. The **adjustment account** is an account used simply as an intermediary through which adjustments are made, as accruals of interest and other items. The profit-and-loss account might even be considered an adjustment account, since it is opened for the purpose of adjusting the profits and losses, and after these adjustments are made its function ceases.

15. **Petty accounts** are usually small or transient accounts of customers, and may be included in one collective account in the customers' ledger, or they may even be placed in a small

PETTY ACCOUNTS

191—			Folio			191—			Folio		
Jan.	1	A. King	16	33	10	Jan.	01	A. King C	22	33	10
	5	O. W. Long	24	10	60						
	10	S. H. Hahn	30	9	90		16	S. H. Hahn C	31	9	90
	15	Susan Gray	36	18	40						
	20	John Green	42	25	00		30	John Green C	38	25	00

FIG. 1

ledger by themselves. A card ledger is appropriate for such transient accounts. The summary or collective petty accounts are kept as shown in Fig. 1.

It will be seen from the illustration that credits are entered on the same line as the respective charges. In this plan of entering, the names need not be repeated, but the entry clerk must use care in placing credits on the correct lines. Instead of entering credits on the lines opposite the charges, they are sometimes entered in order as they are paid, irrespective of location; the account paid is then ticked with pen or pencil on the debit side. Other methods also are in common use among bookkeepers. In stores where the cash plan prevails, there are often cases where credit is given to well-known customers. A good way to handle these is to use a card ledger, on which a detailed record of the charge should be made. No other entry is made for the sale until payment is received, at which time the amount is included as part of the day's cash sales. When preparing monthly or annual statements, the customers'

accounts may be included as one total in the balance sheet. If the unpaid petty accounts are considered as unsold merchandise, then such account should be entered as an inventory to the merchandise account.

16. As the cash-book balance is the amount taken into the trial balance to complete the equilibrium of the ledger, the cash book is obviously considered a part of the ledger and is therefore the real **cash account.**

17. The term **invoice** should be used for the lists, or bills, of goods bought; the term **bills** for lists of those sold.

18. **Money** is a medium of exchange, a measure of value, and a means of making deferred payments. It may consist of any commodity that can conveniently and satisfactorily serve the purpose. Various commodities have been used to serve as money in the world's history, but it has been found that gold and silver are preeminently appropriate and adapted to the use required of coins. The moneys of the United States now in circulation are as follows: Gold coins ($\frac{9}{10}$ pure, $\frac{1}{10}$ alloy), $2.50, $5, $10, and $20; silver dollars; subsidiary silver, 50-, 25-, and 10-cent pieces; minor coins, 5- and 1-cent pieces. The paper moneys are United States notes (including some fractional currency), gold and silver certificates, national-bank notes, federal-reserve-bank notes, and treasury notes.

19. **Currency** has reference to the money that passes current throughout the country, and includes both coin and paper moneys.

20. **Cash** includes money, checks, bank drafts, postal and express money orders, and, in fact, any paper that can readily be converted into money.

21. **Cash items** consist of memo's of money borrowed from the till by employes, I.O.U.'s of officers, shortage memo's, unpaid sight drafts, etc.

22. The **working capital** is that part of the net capital of an undertaking which is available for the working of such

undertaking; properly speaking, it is the liquid or current assets, that is, the part of capital used in the active operation of a business. It may consist of: The capital stock subscribed and paid; the capital stock sold to stockholders to raise cash; the dividends or surplus undistributed; the part of purchase money of business allowed to remain unpaid; loans from bank or others; proceeds of accommodation notes; proceeds of sale of bonds; and proceeds from assessment of stockholders.

FORMS OF ACCOUNTS

THE LEDGER AND ITS FUNCTIONS

KINDS OF LEDGER

23. The **ledger** is the book of accounts, and all the other books converge or feed into it. It contains the various accounts of the business in which are summarized the results of all the business transactions. Whether or not the accounts should contain many details depends largely on the ideas of the bookkeeper and on the accounting system installed. In earlier days, the accounts of customers, for instance, contained the details of all sales and credits. In this respect it was practically a book of original entry without any other record than perhaps a day book or a blotter that contained a lead-pencil or a pen-and-ink record of orders when taken. The ledger of today, however, is scientifically arranged and contains only such data as are necessary in making summaries and in providing information pertaining to the business. By means of page references, full details may be obtained at any moment by consulting the books of original entry. The ledger, as now known, is a gradual evolution from the form originally used.

It is not the intention here to discuss bookkeeping principles and the ledger with its various accounts, but rather to discuss the practices now in use. In this connection are described the various kinds of ledgers, the subdivisions of ledgers, and the various ways in which ledgers are ruled.

24. The **bound ledger** has been in use for centuries and is still used in almost every business office. Its advantage lies in the fact that leaves cannot be removed and that everything placed therein becomes a permanent record. Its disadvantage lies in the fact that "deadwood," or closed accounts, cannot be removed as in the case of a loose-leaf ledger, thereby rendering the ledger unwieldy. Of course, if the ledger is properly divided, as it should be, this disadvantage is reduced to a minimum, because the index is usually referred to when any particular account is needed. Even with its additional accounts, however, it is not so clumsy as the average loose-leaf ledger. When opening the ledger, sufficient space should be left to accommodate the various accounts for 1, 2, or more years, according to the length of time it is to be used. The modern ledger contains, as a rule, only the general accounts of the business and therefore need not be large. The fact that it contains only live accounts, the most important accounts of the business, is strong reason for having a bound book. The index may be contained in the first few pages of the ledger or in a separate index, or the ledger may be self-indexing. Since the accounts are few, however, the bookkeeper will find it to his advantage to memorize the pages, at least those which are used most. A good plan is to have on the desk for ready reference a card giving the pages of the various ledger accounts, especially of those which are most active.

25. The **loose-leaf ledger** of today is a familiar device. It is so arranged that the leaves when filled, or when the account becomes closed or obsolete, may be removed and placed in a separate binder. The chief advantage of this style of ledger lies in the fact that only live accounts are contained therein, and that unnecessary leaves are excluded. The ledger is usually locked, and leaves can be placed therein or removed simply by unlocking and releasing the tension at the back of the binder. The key is usually kept by the head bookkeeper. Of course, there are various kinds of locks and binders, and various sizes of sheets, to meet the requirements of different lines of business. The loose-leaf ledger is usually divided

alphabetically so that names may be found in their respective locations. Twenty-six index leaves are generally used, one being placed before each letter of the alphabet on which the ledger names are placed. Sometimes the index sheets are omitted, in which case the ledger is self-indexing. Any name can be readily located by means of the thumb tabs showing the letters and the vowels under which the respective names should be placed.

26. The **loose-sheet ledger** has come into use in recent years and has become quite popular, especially for small retail accounts. A carbon copy of each time sale is made, usually on the typewriter, and placed in a binder or file under the customer's name. It will be seen that his account consists entirely of loose sheets, and as each charge is paid the sheet or sheets can be removed and placed in a transfer binder. The original, of course, is given or mailed to the customer at the time the sale is made. The amount due from each person may be totaled on the last sheet placed in the file, or a summary may be contained on a separate sheet kept for that purpose. The sheets are filed away under the name or the number of the customer and can be referred to readily. They may be kept together in the binder under the respective letters, or else placed in a folder and filed in a regular filing case in the same manner as the regular correspondence. This plan of account keeping has been found advantageous in many cases where small sales are made, and as it eliminates all copying and intermediate records the probability of error is reduced to a minimum. It might even be more simplified by adopting the plan suggested in connection with the bill-and-charge-form ledger, which is described later. The sales for the day may be summarized on a separate sheet or on the adding machine, and the aggregate credited to the sales account, with a corresponding charge to a controlling account for customers in the general ledger. If desired, this plan of ledger may be maintained only for small sales and such accounts retained entirely as an auxiliary record until payment is made, at which time these payments may be entered in the sales for the day.

Sometimes customers' accounts are filed according to number, in which case separate index cards are required. The index card or book gives the name, address, and number of each customer. All sales to him are therefore recorded in a file or a case, according to the number given and can be referred to readily. Either cards or loose sheets may be used.

27. The **card ledger** has become exceedingly popular. Cards are used exclusively, but in the same manner as the leaves of a ledger. They are ruled the same as ledger accounts, both front and back, and are placed in alphabetical order in a cabinet or tray. These cards constitute the "ledger" and can be conveniently divided in any way desired—alphabetically, numerically, or geographically. The size of the cards may be large or small, to suit conditions and to accommodate the number of details to be placed thereon. The stock size is 3 in. $\times$ 5 in. Use may be made of the regular ledger ruling or of rulings designed to meet special cases. When an entry is to be made, the card is removed from the file, and afterwards returned to its place. Closed and inactive accounts should be removed therefrom and placed in a separate tray, keeping only current or live accounts in the main files. Care must be taken to see that the cards are placed where they belong after entries are made on them. Some bookkeepers finish all postings before replacing any of the cards in the files. When this is done, a summary or a proof of all entries can be made to determine whether or not they agree with the total sales and credits for the day. This is a commendable plan.

28. The **tabular ledger** is a columnar ledger or book for the keeping of accounts that must be dissected or divided into their component parts. The customers' names are placed in a margin at the left-hand side of the page, leaving one, two, or three lines for each name and address, while the items of charge are distributed into the various columns. The columns are headed with each class of items requiring to be credited. It will be seen, then, that a debit is made to the customer and a credit to the accounts represented by the column headings. A "total" column is used at some convenient place on the page,

and it is obvious that the aggregate of all distributive columns should equal the total column. This form of ledger is especially well adapted to keeping accounts of water, light, and telephone companies, and to many other lines of business where great divisions are necessary. It has been applied to advantage in building-and-loan associations, hotels, real-estate offices, etc. It is a very good plan for the use of professional men. The daily-balance ledger is a form of tabular ledger, as is also the expense-analysis sheet, both of which are explained later. Sometimes the customers' names are placed at the top of columns and the constituent items, in the left-hand margin. The book may be bound or loose leaf.

29. The **retail-bill-and-charge-form ledger** is very much like the loose-leaf plan just mentioned, and it is especially desirable for the retail grocery business where frequent small sales are made. It has been called a *ledgerette*. For persons who make numerous small purchases to be paid for on payday or at specific times, it is particularly appropriate. All the purchases made by the customer are entered on a statement sheet, the customer's name being placed at the top. Items of first, second, and third purchase are placed in succession, making use of the back of the sheet if necessary. When the customer pays his bill, the sheet is removed from the file, receipted, and given to him. In this way the file is not encumbered with closed accounts. The benefits of this method are apparent where a large number of accounts are paid on a single day. The loose leaves, or statements, are filed in a common binder and arranged alphabetically for ready reference. A carbon copy of each bill may be made if desired and placed in the binder along with the statement of daily entries. These copies may be returned to the customer when settlement is made, or they may be kept for future reference if necessary. Of course, the disadvantage of this plan lies in the fact that no permanent record is kept of the customer's account, because the so-called account is removed from the binder, receipted, and given to him at the time of payment. It is an improvement, however, over the pass-book plan, which is still used in some places.

Sometimes a typewriter or a billing machine is used. This plan is an improvement on the one just suggested, because a carbon copy is kept for permanent record. The form shown in Fig. 2 illustrates the plan in general use. The folded sheets with carbon between are kept in either a binder or a vertical file, and as the charge slips are sent in from the clerks making the sales these sheets are taken from the binder or the file and slipped into the typewriter at the proper place by means of the

FOLIO____

UNDERWOOD GROCERY COMPANY

241 BROADWAY, NEW YORK

Sold to Mrs. C. J. Cromwell.

Address 1414 Providence Ave., City.

Month February, 1913.

Date	Description	Price	Amount	Daily Total	Credits
3	2 lb. Coffee	.40	.80		
	16 lb. Sugar		1.00		
	50 lb. Potatoes		.50	2.30	
5	5 lb. Roast beef	.25	1.25		
	2 Heads Lettuce	.05	.10	1.35	.80
5	2 lb. Coffee returned	.40		3.65	
				.80	
				2.85	

FIG. 2

NOTE.—Credits may be written in red ink.

retail-bill-and-charge attachment, and the charge made. At the end of the month, the original is torn off and mailed to the customer as an itemized bill or statement, and the copy is filed in a monthly binder that forms a sales ledger for that month. As the accounts are paid they are taken from the binder and placed in a permanent file.

This system contemplates monthly settlements by customers, and, and as an illustration, in February the manager can refer to his January binder at any time and see the unpaid January accounts.

APRIL, 191__ SAFEGUARD OR DAILY BALANCE LEDGER

Name	Balance	Monday, April 7, 191__			Tuesday, April 8, 191__			Wednesday, April 9, 191__		
		Debits	Credits	Balance	Debits	Credits	Balance	Debits	Credits	Balance
1. J. H. Anderson, Scranton, Pa.	960 20	142 00	100 00	1,002 20	65 00	82 20	985 00			
2. W. D. Long, 872 Market St.	234 60	110 00	150 00	194 60		100 00	94 60			
3. George Davis, Trenton, N. J.	75 50	80 50	120 00	36 00	54 00	90 00				
4. Bain Mfg. Co., Dover, Del.	775 60	130 00		905 60	84 20		989 80			
5. A. W. King & Co. City		563 00	200 00	363 00	428 40	300 00	491 40			
6. Block Brothers, Pittsburg, Pa.	220 00	175 80	500 00	*104 20	740 70		636 50			
7. Etc.										
Footings	2,265 90	1,201 30	1,070 00	2,501 40	1,372 30	572 20	3,197 30			
Negatives				104 20						
Balances				2,397 20			3,197 30			

FIG. 3

NOTE.—The star (*) indicates red ink, a negative to be subtracted.

30. The **daily-balance,** or **safeguard, ledger** has come into prominent use, especially in banking institutions, where it is known as the *Boston bank ledger*. It is known also as the *daily-balance ledger* because it is balanced and proved daily, thereby providing a safeguard against errors. A form of this ledger is shown in Fig. 3.

It is a columnar book, either bound or loose-leaf, and the number of columns required depends on the number of items to be entered. The columns are arranged in groups of three or four, and are designed to cover the transactions for 1 day, 1 week, or 1 month, as the case may be. If the entries are made daily, each double page may cover 1 or 2 weeks; if weekly, from 3 to 6 months; and if monthly, at least 1 year. By the use of short leaves, the accounts can be continued from page to page without rewriting the names. In the form shown in Fig. 3 each day has three columns, but if the transactions are numerous an additional column should be used or additional lines given to the account. The number of lines required for each person or account depends on the activity of the account, and may take as many as four.

The accounts may be numbered, as indicated, if desired. Balances are carried forwards from day to day or week to week, as may be the case. When the pages are wide, every third, fourth, or fifth line should be either heavy or of another color, to serve as guide lines. The advantage of this kind of ledger lies in the fact that it is a proof against errors in balancing, because if an error has been made the daily totals will not prove. The total of the previous balance column plus the debits, minus the credits, must equal the new balance column, which is made up of the aggregate of individual balances. A reference to the illustration will make this matter clear.

31. This kind of ledger can be adapted to the accounts of either customers or creditors, and as several accounts are contained on a page the reference thereto is considerably facilitated. It is used extensively in banking institutions for both the general ledger and the depositors' ledger. When both debits and credits are to be placed in the one balance column, the

debits should be recorded first and then followed by the credits; or, if desired, the credits may be made in red ink in order to distinguish them from the debits, which are in black. A negative balance must of course be recorded in red ink. In the depositors' ledger, the columns are usually headed: Balance, Deposits, Checks, Total Checks, Balance. There is usually a controlling account in the general ledger to represent the amount indicated by the separate ledger.

SUBDIVISION OF LEDGERS

32. In a business of moderate size, all the transactions may be recorded in a simple set of books in which one ledger is used to contain all the accounts involved, and from which the trial balance is taken at desired intervals. In almost every large business, however, it is found advisable to subdivide the various books in order that clerks and bookkeepers may perform the duties assigned to them without interfering with the work of one another. In carrying out this plan of division, it becomes necessary to subdivide the ledger into two or more parts because of the great number of transactions that have to be recorded. This division permits of posting being done by two or more ledger keepers where the work has been found too heavy for one. The most general divisions of the ledger are as follows:

1. *Sales ledger*, containing the personal accounts of customers. This ledger may be bound, loose-leaf, or card, according to the plan desired, but the manner of handling it is the same in each case. It is known also as the debit ledger, the customers' ledger, and the accounts-receivable ledger.

2. *Purchase ledger*, containing the personal accounts of creditors, the persons from whom goods are purchased. Like the sales ledger, this ledger may be bound, loose-leaf, or card. It is known also as the credit ledger and the accounts-payable ledger and for importers as the foreign ledger.

3. *Expense ledger*, containing the various expense accounts of the business. By the use of this special ledger the various expenses can be subdivided into their component parts more readily than is possible with the general ledger.

4. *General ledger*, containing all the main or general accounts of the business. It may be bound, loose-leaf, or card, as desired, but in most cases it is thought best to use a bound ledger for the general accounts. This ledger contains the controlling accounts with the various subordinate ledgers and is therefore self-balancing.

33. Sometimes the ledgers just mentioned are still further divided. For instance, instead of one sales ledger there might be a city sales ledger and a country sales ledger, or a number of ledgers arranged according to the letters of the alphabet, as sales ledger A to L and sales ledger M to Z. The purchase ledger might be divided similarly. Special ledgers may be kept for branch offices also, or if desired for private accounts; that is, those accounts pertaining to capital, plant, and revenue which are to be kept from the scrutiny of the bookkeepers. The special ledgers have different names, as auxiliary ledger, special ledger, subordinate ledger, separate ledger, side ledger, etc.

34. The **general ledger** (sometimes called the *private ledger*) is usually kept by the head bookkeeper, while the various subordinate ledgers are kept by assistants and made to harmonize with the general ledger from time to time; that is, daily, weekly, or monthly. The total sales, purchases, expenses, credits to customers by cash or otherwise, and debits to creditors of cash or notes, are obtained from the respective books by the head bookkeeper himself, from which books he makes entries to the general ledger accounts, or they are reported to him in writing from time to time by his assistants, from which reports he makes the required entries. In any case, his ledger is made to show the transactions of the business in totals, while the details are recorded in the separate ledgers. When the general ledger itself requires more attention than the head bookkeeper can give to it, a further division is made and this ledger is known as the private ledger. In this case, controlling accounts are kept also between these ledgers, the same as between the general ledger and the subordinate ledgers. The private ledger may be kept by the senior bookkeeper or by one of the proprietors.

35. The private ledger contains such accounts as the proprietors desire to keep from the knowledge of the bookkeepers and other employes. It usually includes the accounts necessary to determine the earnings of the business and its financial condition, but the accounts to be selected depend on the ideas of the proprietor. The accounts usually included are the capital accounts, investments, loans, profit and loss, reserves, surplus, etc. Sometimes it includes the salary accounts of officers or partners and whatever other nominal accounts are to be kept private.

36. When a private ledger is used, it obviously contains a limited number of the general accounts, while the remaining accounts are kept in the general ledger. It will be seen, then, that a division is made into two main ledgers, one known as the general ledger and the other as the private ledger. Each of these, in turn, has a controlling account with the other, and each controlling account will have the same amount as the other. In the private ledger there is a "general-ledger controlling account," and in the general ledger there is a "private-ledger controlling account." The other controlling accounts for the subordinate ledgers are contained in the general ledger, which ledger contains also the remaining real and nominal accounts that are not in the private ledger. The general ledger in this case is the "key" ledger. When a private ledger is referred to, however, it does not always mean that it is a division of the general ledger. When the ledgers are subdivided, it is necessary to have appropriate columns in the cash book and journal in order to care for accounts that occur with sufficient frequency.

Sometimes a private journal is used in connection with the private ledger, in which the entries pertaining thereto are recorded; but it is obvious that amounts placed in the private ledger must also have a corresponding entry in the general-ledger controlling account in order that the ledgers may be kept in harmony. The general ledger is sometimes called the *balance ledger* in contradistinction to the private ledger, because it contains controlling accounts and balances.

37. Although it is true that the subdivision of ledgers may be carried to excess in some cases, on the other hand it has many advantages in a large institution where the work is heavy and the employment of many assistant bookkeepers is necessary. Some of the other special ledgers most commonly used are as follows:

1. *Branch-office ledger*, containing separate accounts with the various branches maintained by the institution.
2. *Agents' ledger*, containing accounts with the various agents.
3. *Consignment ledger*, containing accounts with the various commission merchants or agents to whom goods are consigned for sale on commission. A special ledger may also be kept for consignments received to be sold for others.
4. *Bill books*, containing details of notes and acceptances received and given.
5. *Real-estate ledger*, containing accounts with the various holdings of real estate; that is, building, ground, etc.
6. *Investment ledger*, containing details of the various investments in stocks, bonds, mortgages, commercial paper, etc.
7. *Contract ledger*, containing accounts and details of the various contracts being conducted by contractors, builders, etc.
8. *Cost ledger*, showing the accounts and details of the various jobs in the cost department of a manufacturing establishment.
9. *Material ledger*, showing the accounts and details of the various kinds of material and stock held by a manufacturing concern.
10. *Advertising ledger*, containing accounts of the various kinds of advertising being carried in periodicals, papers, etc. This ledger may also include accounts of the various agencies through whom advertising is placed.
11. *Stockholders' ledger*, containing accounts of the various stockholders of a corporation.

38. In some cases, two or more of the various ledgers just mentioned are included in one. In a small business where the subdivision of the ledger is required and the accounts are not

numerous enough to justify the opening of a special ledger, a common plan is to divide the general ledger into two or three parts. Under this plan, the accounts of customers can be placed in the back part of the book, and the accounts with creditors preceding them in the center of the ledger, while all the general accounts can be placed in the first part of the book with or without controlling accounts, to represent the subdivisions. Although the ledger may be divided into several parts, the final results remain unchanged, as at any time the sum of all the debits will equal the sum of all the credits if the posting has been correctly done, and exactly the same trial-balance results will be obtained as if all the accounts had been kept in one ledger instead of in several. But if the books should prove to be out of balance, then arises the desirability of being able to determine at once which ledger is wrong; this can readily be done by keeping controlling accounts in the different ledgers by means of which each ledger keeper is able to prove the accuracy of his own work by taking off an independent trial balance.

LEDGER RULINGS

39. As there are several forms of ledger accounts in use, the **rulings** are usually made to suit the convenience of the business. Sometimes the account contains considerable data for the identification of each entry, and, again, it contains only a reference to the source from which each item is posted. In earlier days, nearly all the details of each sale were placed in the customer's account, but this plan does not now prevail in business offices; yet it is sometimes advisable, especially in customers' accounts, to show supporting data for entries made. This plan frequently saves the trouble and time of referring back to the original entries. The use of figures, letters, or symbols is not uncommon in briefing information in the ledger accounts. The ledger-account forms and rulings that follow are suggestive, and can be modified to meet the needs of any establishment. They can be used in bound, card, or loose-leaf ledgers.

40. Regular Form.—The regular ledger form, as shown in Fig. 4, has been in common use for a great length of time and serves its purpose well. It is evidently the most popular, judging from its extensive use.

41. Money Columns in Center of Page.—The form of ruling shown in Fig. 5 has an advantage over the regular form

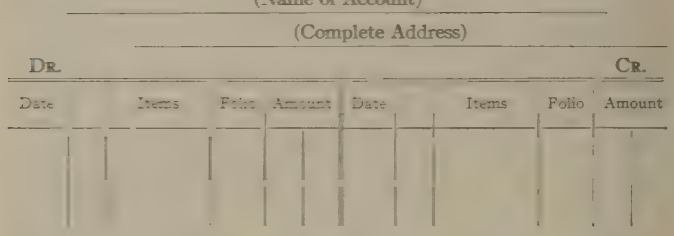


Fig. 4

in that the amounts are close together and can be readily compared. One ruling serves for both columns. If desired, a balance column may be placed between the two amount columns.

42. Balance Column.—The form shown in Fig. 6 illustrates the manner of handling the balance column. It may contain at all times the balance due from or to the individual. Not infrequently, however, it is used only at the end of the

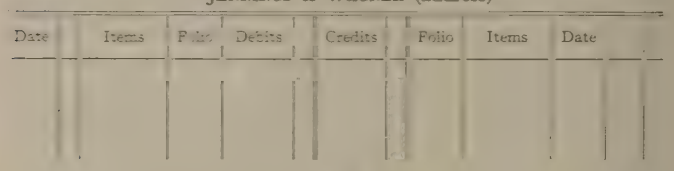


Fig. 5

month, as the attempt at making new extensions every time an entry is made involves extra work. Frequently the balance column contains only lead-pencil figures. Sometimes there are two balance columns, debits and credits, but these seem unnecessary, because the nature of the account indicates whether

it is a debit or a credit. In the case of accounts receivable, all balances are presumably debits, and an opposite showing is usually indicated by writing the amount in red ink or by putting a ring around it. A like procedure is applicable to accounts

DAVID LIVINGSTONE (address and rating)

Date	Entry of Items	Folio	Dr.	√	Cr.	Balance

FIG. 6

payable also. The balance column may be placed in the center of the page if desired, or in any desirable place. In cases where the balances change from debit to credit very frequently, two balance columns are necessary. This is sometimes overcome by using only one balance column and a narrow key column next to it. The nature of the balance is indicated by a Dr. or a Cr. placed before it in this narrow column. The checking column is used by the bookkeeper or the auditor for making check-marks when verifying amounts; this column is in general use today in all kinds of ledgers.

43. Package Column.—Sometimes the account is divided into two or more columns for the accommodation of items such

DONALDSON BROTHERS COMPANY

Rating_____ Address_____

Credit Limit_____

Date	Entry	Folio	Bags	Amount	Date	Entry	Folio	Bags	Amount

FIG. 7

as packages, bags, casks, interest, discount, different kinds of merchandise, etc., as is shown in Fig. 7. It is frequently advisable to keep track of such items separately, and this form

has been found most appropriate. Record of bags or packages may be kept in either quantity or value. There is hardly any limit to the use or adaptability of columns in ledger accounts, and in many cases books are ruled to order for meeting specific requirements. Both debit and credit columns should be in harmony.

44. Loose-Leaf Form.—The form shown in Fig. 8 can be used in either a loose-leaf or a card ledger. Indeed, any style of ruling or arrangement of columns may be used, so long as it is adapted to the needs of the business. Loose leaves are

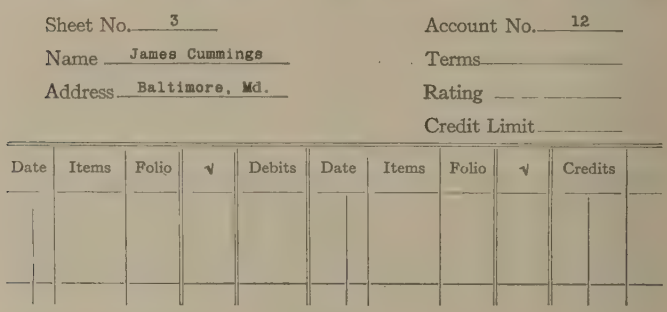


FIG. 8

usually numbered, and the Sheet No. indicates how many sheets or leaves have been used for any particular account. In this case, two sheets have already been filled and can be found in the transfer binder, the third being in use. It will be seen that this is account No. 12; that is, the twelfth account opened under this particular letter of the alphabet. When a self-indexing ledger is used, the account number is not needed. The unit rulings in the money columns keep the figures in line and make them easier to add, and the number of such columns required will depend on the number of figures to be placed therein. The information respecting terms, rating and credit limit is of special value in personal accounts.

CONTROLLING ACCOUNTS

GENERAL DISCUSSION

45. By means of **controlling accounts,** known also as *control accounts*, *summary accounts*, and *adjustment accounts*, the proprietor is enabled to ascertain without delay the total amount due from customers or to creditors. Where the accounts aggregate hundreds and even thousands, this saving of time can easily be appreciated. In nearly every large business subordinate ledgers are kept, thus requiring the use of the controlling accounts. The personal ledgers represented by the controlling accounts are known as the sales ledger, the accounts-receivable ledger, and the debit ledger; and the purchase ledger, the accounts-payable ledger, and the credit ledger. The word *controlling* need not be placed after the name of the account; it is done here to save confusion. Some bookkeepers while maintaining self-balancing ledgers do so by entirely omitting controlling accounts. When taking the monthly trial balance, they secure from the assistant bookkeepers the aggregate of accounts contained in their ledgers, and if such aggregates are correct a trial balance can be obtained without further work. The benefit derived from this procedure is that the necessity of making entries to controlling accounts is entirely obviated, thus saving time and unnecessary confusion. It is advisable, however, to maintain the controlling accounts in the general ledger in order that the head bookkeeper may keep in touch at all times with conditions without having to depend on his assistants. The controlling accounts may conveniently be omitted from the subordinate ledgers.

46. Self-Balancing Ledgers.—By the use of self-balancing ledgers, it is possible for a merchant to obtain a complete statement of his business from the general ledger alone without reference to either the sales or the purchase ledger. The reasons for this are that the difference between the two sides of the sales-ledger account in the general ledger is the

CUSTOMERS' CONTROLLING ACCOUNT

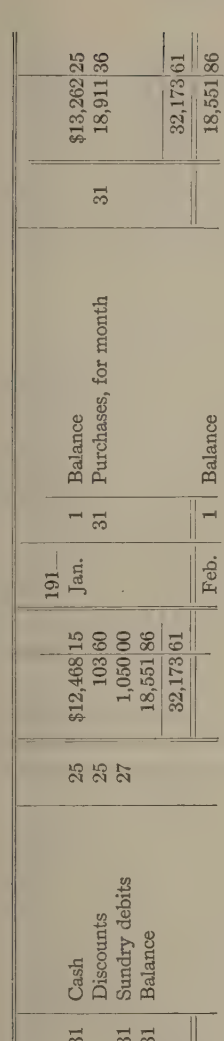
191—						191—				
Jan.	1	Balance				Jan.	31	Cash, receipts for month	25	$25,898 60
	31	Sales, total for month	16	$36,584 95			31	Discounts	25	113 25
				22,894 33			31	Notes receivable	14	7,500 00
							31	Sundry credits	26	735 20
							31	Balance		25,232 23
				59,479 28						59,479 28
Feb.	1	Balance		25,232 23						

FIG. 9

net total balance due from customers, and that the difference between the two sides of the purchase-ledger account shows the net total balance due to creditors; in other words, these two accounts are summaries of the ledgers that they represent.

Another great advantage in having books arranged on this principle is that mistakes in any one of the ledgers can be located quite readily, for the reason that if a ledger is out of balance the error is necessarily one connected with the entries posted to that particular ledger. When all the ledgers are in balance, the general-ledger controlling account in the sales ledger will correspond with the sales-ledger controlling account in the general ledger with the sides reversed; and the purchase-ledger controlling account in the general ledger will in a similar manner correspond with the general-ledger controlling account in the purchase ledger.

47. Debit-Ledger Controlling Account.—As has already been stated, the names used for designating different ledgers vary considerably, and yet any one of these names is perfectly suitable. The account shown in Fig. 9 will serve to illustrate the manner in which



CREDITORS' CONTROLLING ACCOUNT

191—						191—				
Jan.	31	Cash	25	$12,468	15	Jan.	1	Balance		$13,262	25
		Discounts	25	103	60		31	Purchases, for month	31	18,911	36
	31	Sundry debits	27	1,050	00						
	31	Balance		18,551	86						
				32,173	61					32,173	61
						Feb.	1	Balance		18,551	86

FIG. 10

to keep the controlling account for customers during a period of 2 months. The word *controlling*, as has been said before, is frequently omitted in such cases as this.

48. Credit-Ledger Controlling Account.—The accounts with creditors are, of course, the opposite of those with customers, and for that reason they are recorded in a separate ledger. The account shown in Fig. 10 indicates the sources from which this ledger receives its entries. It must be kept in mind that controlling accounts as a rule record totals only, though it is not unusual for separate items also to be posted therein. The illustrations show monthly totals only, but these totals may be posted weekly or even daily, if desired.

When a separate ledger is first opened, the old accounts that have to be entered in it should be posted through the journal. If there are too many accounts, the journal may record only the total and a reference made to the various accounts themselves as opened in the ledger or as contained on a separate schedule.

The use of the controlling accounts in the various books is shown in the following example.

ILLUSTRATION OF THE USE OF CONTROLLING ACCOUNTS

49. In order to illustrate the use of controlling accounts, the following simple transactions will be entered through the books, which, for this purpose, shall be assumed to be the cash book, sales book, purchase book, journal, bill book, sales ledger, purchase ledger, expense ledger, and general ledger. The books are shown to illustrate the plans of procedure, not as models of form.

1912		
Sept. 1	Began business with a cash investment of	$5,000.00
Sept. 1	Paid rent	50.00
Sept. 1	Paid office expenses	35.00
Sept. 5	Bought merchandise on account from A. Gray	300.00
Sept. 6	Bought merchandise on account from J. Wood	400.00
Sept. 7	Bought merchandise on account from S. H. Long	800.00
Sept. 8	Sold merchandise on account to W. Smith	100.00
Sept. 8	Bought merchandise on account from Bain & Murray	900.00
Sept. 10	Paid cash for advertising	60.00
Sept. 10	Paid cash for general expenses	40.00
Sept. 15	Sold merchandise on account to G. Miller	150.00
Sept. 15	Sold merchandise on account to A. B. Donlin	500.00
Sept. 16	Sold merchandise on account to J. W. Stevens	450.00
Sept. 16	Paid A. Gray, on account	120.00
Sept. 20	Paid J. Wood, on account	230.00
Sept. 20	Received A. B. Donlin's 20-day note for	300.00
Sept. 20	Gave note at 30 days to Bain & Murray	600.00

Sept. 20	Paid office expenses.....	25.00
Sept. 22	Received of W. Smith, on account	75.00
Sept. 22	Gave S. H. Long 20-day note for	400.00
Sept. 22	Received note for one month from J. W. Stevens.....	200.00
Sept. 25	Received of George Miller, on account.....	80.00
Sept. 30	Paid salaries for month.....	200.00
Sept. 30	Inventory of merchandise on hand.....	1,850.00

To enable the ledgers to be balanced independently, the entries that are to be posted to the personal accounts in the sales and purchase ledgers must be so arranged that the totals of these postings can be readily ascertained and posted to special controlling accounts in the general ledger. The entries made in the various books follow.

50. Posting from the Cash Book.—Note in Fig. 11, that the $155 received from customers is a credit to the sales-ledger controlling account in the general ledger, as well as to their individual accounts in the sales ledger; this amount is also a debit to the general-ledger controlling account in the sales ledger for the purpose of making that ledger self-balancing also. A similar, though reverse, treatment is made of the $350 paid to creditors. The expenses shown in the expense column occupy a ledger by themselves. Expense account is debited in the general ledger for $410, while the several expense accounts are shown separately in the expense ledger.

The amounts appearing in the cash book under columns headed General Ledger are posted in the usual way to the proper ledger accounts in the general ledger. It will be seen that each item to be posted to the sales ledger appears in the sales-ledger column, W. Smith being credited with $75, and George Miller with $80. The total of this column is posted to the credit side of the sales-ledger controlling account in the general ledger, thus showing in one amount the total credits that have been posted to the personal accounts in the sales ledger during the month. There is now in the sales ledger

CASH BOOK

191—	RECEIPTS				191—	PAYMENTS				
Date	Account Credited	Folio	Sales Ledger	General Ledger	Date	Account Debited	Folio	Pur. Ledger	Expense	General Ledger
Sept. 1	Capital investment			$5,000 00	Sept. 1	Rent month of September			$ 50 00	
22	W. Smith on account		$75 00		1	Office expenses			35 00	
25	G. Miller on account		80 00		10	Advertising			60 00	
						General expenses			40 00	
					16	A. Gray, on account		$ 120 00		
					20	J. Wood, on account		230 00		
					20	Office expenses			25 00	
					30	Salaries for month			200 00	
			155 00	5,000 00		Dr. Purchase-ledger account		350 00	410 00	
Sept. 25	Cr. Sales-ledger account			155 00		Cr. General-ledger account in purchase ledger				
	Dr. General-ledger account in sales ledger				30	Dr. Expense account		410 00		
						Cr. General-ledger account in expense ledger				
					30	Balance on hand		4,395 00		
				$5,155 00				$5,155 00		
Oct. 1	Balance on hand			$4,395 00						

FIG. 11

credits amounting to $155 with no corresponding debit; therefore, an adjustment entry is made to represent the cash debit of $155. This is, for example, placed on the debit side of the cash book, as shown in the illustration, the general-ledger controlling account being debited for $155 in the sales ledger.

In the column headed Purchase Ledger will be found items to be posted to the personal accounts in that book; A. Gray is thus debited with $120 and J. Wood with $230, in the purchase ledger. The total of this special column is posted in the general ledger to the debit of purchase-ledger controlling account, thus showing the total payments of cash to creditors during the month. In order to obtain a balance in the purchase ledger, a special adjustment entry is posted to the credit side of the general-ledger controlling account in that book; this amount of

191— SALES BOOK

			S. L. FO.	
Sept.	8	W. Smith		$ 100 00
	15	G. Miller		150 00
	15	A. B. Donlin		500 00
	16	J. W. Stevens		450 00
		Credit general-ledger controlling account		$1,200 00

FIG. 12

$350 is, for illustration, placed on the credit side of the cash book, as shown, the general-ledger controlling account being credited for $350 in the purchase ledger. A like procedure is followed for the expense ledger. The cash account itself is in reality a part of the general ledger, and the balance of $4,395, in conjunction with the accounts already posted, produces a perfect trial balance from the general ledger.

Sometimes the cash book is subdivided in order to permit of two or more persons working on it at the same time. It is not uncommon to find three or more books containing the cash receipts, in order that each set of ledgers may have its corresponding entries for cash received from customers. This gives the entry clerk exclusive use of his own cash book, though the

head bookkeeper may himself have control of the cash. In this way, the credits of the various cash books are correlated in the main cash book of the bookkeeper, the cashier, or the treasurer.

51. Posting from Sales Book.—Customers are charged with the amounts opposite their names in their respective accounts in the sales ledger, as shown in Fig. 12, and an account in the sales ledger, called the general-ledger controlling account, is credited with the total, taking the place of the sales account, which is credited in the general ledger from the following journal entry made at the end of the month:

Sales ledger controlling account, Dr.	$1,200.00	
To sales		$1,200.00

This form of entry may be made at the end of the sales book or in the journal, or the posting may be done without it by carrying the total direct to the accounts affected. This entry and the corresponding entry for purchases is shown later in the journal in order to illustrate the plan of procedure.

The sales books of the business are usually subdivided in accordance with the number of sales ledgers maintained. In case sales sheets are used instead of sales books, the division is obviated, because the carbon sheets may be filed together or separately after the postings are made.

191— **PURCHASE BOOK**

			P. L. FO.		
Sept.	5	A. Gray		$ 300	00
	6	J. Wood		400	00
	7	S. H. Long		800	00
	8	Bain & Murray		900	00
		Debit general-ledger controlling account		$2,400	00

FIG. 13

52. Posting from Purchase Book.—The creditors from whom purchases are made are respectively credited with $300, $400, $800, and $900 in the purchase ledger, as shown in Fig. 13,

TRANSACTIONS FOR SEPTEMBER, 191—

Purchase Ledger	Sales Ledger	General Ledger	L. F.	Entries	L. F.	General Ledger	Sales Ledger	Purchase Ledger
				——Sept. 20——				
		300 00	10	Notes receivable	11		300 00	
				To A. B. Donlin				
				A. B. Donlin's 20-day note				
				——Sept. 20——				
600 00			12	Bain & Murray				
				To notes payable	10	600 00		
				Our 30-day note to Bain & Murray				
				——Sept. 22——				
		200 00	10	Notes receivable				
				To J. W. Stevens' note for 1 month	11		200 00	
				——Sept. 22——				
400 00			12	S. H. Long				
				To notes payable	10	400 00		
				Our 20-day note to S. H. Long				
				——Sept. 30——				
		2,400 00	10	Purchases				
				To purchase-ledger controlling account	10	2,400 00		
				Total purchases for the month				
				——Sept. 30——				
		1,200 00	10	Sales-ledger controlling account				
				To sales	10	1,200 00		
				Total sales for the month				
1,000 00		4,100 00		General ledger		4,600 00	500 00	
		1,000 00	20	Purchase-ledger account				
				Sales-ledger account	25	500 00		
		5,100 00				5,100 00		

FIG. 14

and the general-ledger controlling account is debited for $2,400 in the same book; then the purchase-ledger controlling account is credited in the general ledger from the following journal entry made at the end of the month:

Purchases, Dr.	$2,400.00	
To purchase-ledger controlling account		$2,400.00

From the foregoing it will be seen that the general ledger, sales ledger, purchase ledger, and expense ledger each contains a complete system of double entry in itself. A trial balance may be taken from any one of them without reference to the others; hence, the term *self-balancing*, meaning that each ledger contains a balance within itself.

53. The Journal.—In modern bookkeeping systems, the journal has a subordinate place, because the various entries for purchases and sales, cash receipts, payments, etc. are contained in other books. It is therefore used only for the entry of items that do not properly belong to other books, as opening entries, closing entries, adjusting entries, interest, etc. It may also be used by the head bookkeeper for entering the totals of purchases, sales, etc. at the end of the week or month, as shown in Fig. 14, in case these amounts are not posted from the sales and purchase books direct.

It is not unusual, also, to find a separate journal used by assistant bookkeepers for the adjustment of items in the respective subordinate ledgers, but any adjustment, as between ledgers, must necessarily be made by the head bookkeeper in the general ledger, so that the controlling accounts therein may be adjusted accordingly and kept in harmony with the special ledgers.

54. Posting to the Ledgers.—In order that the manner of handling separate ledgers and controlling accounts may be perfectly clear, the transactions from the cash book, sales book, purchase book, and journal are posted to the several ledgers to which they belong and a trial balance is taken from each ledger, as is shown in Figs. 15 to 22, inclusive.

GENERAL LEDGER

Dr. CAPITAL ACCOUNT Cr.

				191—				
				Sept.	1	By cash	$5,000	00

Dr. PURCHASE-LEDGER CONTROLLING ACCOUNT Cr.

191—				191—				
Sept.	30	To cash	$ 350	00	Sept.	30	By purchase	$2,400	00
		To sundries	1,000	00					

Dr. SALES-LEDGER CONTROLLING ACCOUNT Cr.

191—					191—				
Sept.	30	To sales	1,200	00	Sept.	30	By cash	$ 155	00
					Sept.	30	By sundries	500	00

Dr. NOTES RECEIVABLE Cr.

191—				
Sept.	20	A. B. Donlin 20 days	$ 300	00
	22	J. W. Stevens 1 month	200	00

Dr. NOTES PAYABLE Cr.

					191—			
					Sept.	20	Bain & Murray 30 days	$ 600	00
					Sept.	22	S. H. Long 20 days	400	00

Dr. PURCHASES Cr.

191—				
Sept.	30	To purchase ledger controlling account	$2,400	00

Dr. SALES Cr.

					191—				
					Sept.	30	By sales ledger controlling account	$1,200	00

Dr. EXPENSES Cr.

191—				
Sept.	30	To cash	$ 410	00

FIG. 15

GENERAL-LEDGER TRIAL BALANCE, September 30, 191—

	Dr.	Cr.
Capital		$ 5,000 00
Purchase ledger	$ 1,350 00	2,400 00
Sales ledger	1,200 00	655 00
Notes receivable	500 00	
Notes payable		1,000 00
Purchases	2,400 00	
Sales		1,200 00
Expenses	410 00	
Cash	4,395 00	
	$10,255 00	$10,255 00

FIG. 16

SALES LEDGER

Dr. GENERAL-LEDGER CONTROLLING ACCOUNT Cr.

191—				191—			
Sept.	30	To cash	$ 155 00	Sept.	30	By sales	$1,200 00
	30	To sundries	500 00				

Dr. W. SMITH Cr.

191—				191—			
Sept.	8	To merchandise	$ 100 00	Sept.	22	By cash	$ 75 00

Dr. G. MILLER Cr.

191—				191—			
Sept.	15	To merchandise	$ 150 00	Sept.	25	By cash	$ 80 00

Dr. A. B. DONLIN Cr.

191—				191—			
Sept.	15	To merchandise	$ 500 00	Sept.	20	Note 20 days	$ 300 00

Dr. J. W. STEVENS Cr.

191—				191—			
Sept.	16	Merchandise	$ 450 00	Sept.	22	Note 1 month	$ 200 00

FIG. 17

SALES-LEDGER TRIAL BALANCE, September 30, 191__

General ledger		$545 00
W. Smith	$ 25 00	
G. Miller	70 00	
A. B. Donlin	200 00	
J. W. Stevens	250 00	
	$545 00	$545 00

FIG. 18

PURCHASE LEDGER

Dr. GENERAL-LEDGER CONTROLLING ACCOUNT Cr.

191__				191__			
Sept.	30	To purchases	$2,400 00	Sept.	30	By cash	$ 350 00
					30	By sundries	1,000 00

Dr. A. GRAY Cr.

191__				191__			
Sept.	16	To cash	$ 120 00	Sept.	5	By merchandise	$ 300 00

Dr. J. WOOD Cr.

191__				191__			
Sept.	20	To cash	$ 230 00	Sept.	6	By merchandise	$ 400 00

Dr. S. H. LONG Cr.

191__				191__			
Sept.	22	20 days	$ 400 00	Sept.	7	Merchandise	$ 800 00

Dr. BAIN & MURRAY Cr.

191__				191__			
Sept.	20	Note 30 days	$ 600 00	Sept.	8	Merchandise	$ 900 00

FIG. 19

PURCHASE-LEDGER TRIAL BALANCE, September 30, 191__

General ledger	$1,050 00	
A Gray		$ 180 00
J. Wood		170 00
S. H. Long		400 00
Bain & Murray		300 00
	$1,050 00	$1,050 00

FIG. 20

EXPENSE LEDGER

Dr.	General-Ledger Controlling Account					Cr.
191—				191— Sept.	30 By cash	$ 410 00

Dr.	Rent			Cr.
191— Sept.	1 To cash	$ 50 00	191—	

Dr.	Office Expenses			Cr.
191— Sept.	1 To cash	$ 35 00	191—	
	20 To cash	25 00		

Dr.	Advertising			Cr.
191— Sept.	10 To cash	$ 60 00	191—	

Dr.	General Expenses			Cr.
191— Sept.	10 To cash	$ 40 00	191—	

Dr.	Salaries			Cr.
191— Sept.	30 To cash	$ 200 00	191—	

Fig. 21

Expense-Ledger Trial Balance, September 30, 191–

General ledger		$410 00
Rent	$ 50 00	
Office expenses	60 00	
Advertising	60 00	
General expenses	40 00	
Salaries	200 00	
	$410 00	$410 00

Fig. 22

BILL BOOK

191—

Bills Receivable (or Notes Receivable)

No.	When Received		Account Credited	L. F.	Amount	Maker or Drawer	Date of Note	Time	Due	How Settled	Remarks
1	Sept.	20	A. B. Donlin	11	300 00	A. B. Donlin	Sept. 20	20 days	Oct. 10		
2	Sept.	22	J. W. Stevens	11	200 00	J. W. Stevens	Sept. 22	1 month	Oct. 22		
			Dr. Bills receivable	10	500 00						
			Cr. Accounts receivable	25							

191—

Bills Payable (or Notes Payable)

No.	Date		Account Debited	L. F.	Amount	Payee	Time	Due	How Settled	Remarks
1	Sept.	20	Bain & Murray	12	600 00	Bain & Murray	30 days	Oct. 20		
2	Sept.	22	S. H. Long	12	400 00	S. H. Long	20 days	Oct. 12		
			Dr. Accounts payable		1,000 00					
			Cr. Bills payable							

Fig. 23

55. Notes Book as a Principal Book.—The bill book, or notes book, Fig. 23, contains a complete record of all notes and acceptances received and all notes and acceptances given; it is also known as *notes-receivable* and *notes-payable book*. The first half of the book is usually devoted to commercial paper received and the second half to commercial paper given. In a business where few notes and acceptances are handled, this book is kept entirely as an auxiliary book for the purpose of showing the details of the paper given and received, while the book entries for such papers are made in the journal and from there posted to the ledger accounts affected.

Sometimes the bill book is used as a *principal book;* in other words, as a posting medium. In such a case all notes and acceptances are entered directly into this book and not into the journal; posting is done directly from it to the ledger accounts in the same manner as cash is posted from the cash book to the ledger accounts, thus obviating the necessity of making extra journal entries

56. In connection with the *bills receivable*, all notes and acceptances are recorded, and there should be columns for accounts to be credited, the ledger folio, amounts of notes received, amounts of payments, and remarks. All payments on account of the notes and acceptances are shown in the credit column. At the end of each week or month the totals of bills receivable should be carried to the bills-receivable account in the general ledger. This posting of totals may be done directly from the bill book or by means of journal entries, as in the case of sales and purchases shown later in the journal. The aggregate amount of credits to bills receivable is posted from the cash book and journal to the credit of bills-receivable account in the general ledger. The paper remaining unpaid should be listed in order to prove its correctness by comparison with the bills-receivable account in the general ledger. When the notes handled are numerous, special columns should be maintained in the cash book for their accommodation.

57. In connection with the *bills payable*, notes and acceptances payable should be handled similarly to the bills receivable,

though the entries will be in reverse order. Renewals can be handled by simply making memoranda of such renewals in the bill book, by making two entries, one entry for cancelation of the old note and another for the new note issued. The general-ledger account may be carried as shown in Fig. 24, though

NOTES RECEIVABLE

1912					1912				
Jan.	31	Bill book	$ 7,640	20	Jan.	31	Cash	$ 3,264	80
Feb.	28	Bill book	3,984	60	Feb.	28	Cash	5,132	50
Mar.	31	Bill book	6,150	75	Mar.	31	Cash	4,565	70
Apr.	30	Bill book	9,548	30	Apr.	30	Cash	6,212	50
					Apr.	30	Balance	8,148	35
			$27,323	85				$27,323	85
May	1	Balance	$ 8,148	35					

FIG. 24

postings may be made more frequently if desired. The account may be left open and the monthly balances noted in the margin. It is advisable, however, to balance it at least once a year. The balance should agree with the unpaid notes, as per bill book, and should be verified regularly. The notes-payable account is kept in the same manner, except that items are reversed.

ENTRIES FOR NOTES AND ACCEPTANCES

58. Notes Receivable Discounted.—In order to take care of notes discounted, there is sometimes opened up a special account, called *notes-discounted account*, by means of which can be shown the total amount of notes and acceptances under discount at any time. In order to illustrate such an account assume that there have been received by a wholesale merchant six notes of $100, $200, $300, $400, $500, and $600, respectively. In such a case the procedure would be as follows: First, the notes-receivable account would be debited in the usual way for $2,100. Next, notes 2, 3, 4, and 5 would be discounted, making a total of $1,400 discounted. Assuming the discount to be $12 and the proceeds left to the credit of the merchant the entry would be:

Interest and discount	$ 12.00	
Bank or cash	1,388.00	
To notes discounted		$1,400.00
(Full explanation must be given)		

It will be seen that the actual amount of notes in the merchant's possession is the total of the notes receivable less the credit balance of notes discounted, which leaves $700. Whenever any of the discounted notes are paid, it means that the banker receives the amount due and the maker gets back his note; so far as the merchant is concerned, the transactions have the effect of lessening the ledger assets and decreasing the ledger liabilities by the same amount. Supposing, then, that notes 3 and 5 were paid, the entry would be:

Notes discounted	$800.00	
To notes receivable		$800.00
(Full explanation here)		

It will be noted that up to this time these notes appeared on the ledger as an asset, but were offset by the liability shown under the name of notes discounted. The difference between the two sides of the notes-discounted account now shows $600, which is the amount of notes still under discount; deducting the $600 from the $1,300 gives $700, which is the total amount of notes actually on hand, consisting of Nos. 1 and 6 and amounting to $100 and $600, respectively. In this way, the wholesaler is able to tell at any time the amount of his indirect liability on notes discounted.

In preparing annual statements, it is best to show the total notes receivable; then from this total to deduct the amount of notes under discount at the bank. The balance will be the aggregate amount of notes receivable still on hand, as shown. Since the plan of handling notes receivable discounted herein described involves considerable work in journalizing, there is some objection to its use. As an alternative, the notes-receivable book could be made to exhibit this information with very little extra work, but in some way to prevent this contingent liability being overlooked.

59. Notes receivable transferred by indorsement to creditors to apply on account should be included as notes receivable

discounted, because the contingent liability thereon is the same as in notes discounted at the bank. If, however, a note is transferred and indorsed "without recourse" it should not be included in the account for notes discounted, as there is no

BALANCE SHEET, DECEMBER 31, 191—
(*Showing the Manner of Listing Notes Under Discount*)

Cash	$ 4,200.00	Accounts payable	$15,607.10
Accounts receivable*	11,392.60	Notes payable	7,000.00
Notes receivable	1,300.00	Notes receivable discounted	600.00
Merchandise	26,814.50	Capital	25,000.00
Fixtures	4,500.00		
	$48,207.10		$48,207.10

FIG. 25

further liability on it. In this case, the indorser guarantees that the note is genuine, but does not guarantee its payment.

In preparing the balance sheet, there are two ways of showing the notes discounted. One way is to include them with the liabilities, while the total notes receivable appear among the assets. Another way is to show them only among the assets as

BALANCE SHEET, DECEMBER 31, 191—
(*Another Way of Showing Notes Receivable Discounted*)

Cash		$ 4,200.00	Accounts payable		$15,607.10
Accounts receivable		11,392.60	Notes payable		7,000.00
Notes receivable*	$1,300		Capital		25,000.00
Less notes under discount	600	700.00			
Merchandise		26,814.50			
Fixtures		4,500.00			
		$47,607.10			$47,607.10

FIG. 26

a deduction from the aggregate notes receivable. The brief balance sheets shown in Figs. 25 and 26 are used to illustrate the two methods of handling the discounted notes that are still

*Sometimes only a foot-note is made on the balance sheet, calling attention to the amount of notes receivable under discount at the bank. Since they are a contingent liability, they should, of course, be shown somewhere and this plan brings them to the attention of the management.

unpaid, after the two for $300 and $500 were paid. The notes-receivable account now has a debit of $1,300 and the notes-discounted account, a credit of $600.

60. Figs. 27 and 28 serve to show under what conditions entries for notes receivable and notes receivable discounted should be made.

NOTES RECEIVABLE

Debit with:	*Credit with:*
(*a*) Notes and acceptances received, at face value, either in our favor or transferred to us by indorsement.	(*b*) Notes and acceptances, at face value, when paid in full or in part. (*c*) Notes discounted at bank, when paid at maturity. (*d*) Notes transferred to others, when paid at maturity. (*e*) Notes and acceptances canceled or transferred to overdue account.

FIG. 27

61. Acceptances.—Acceptances have reference exclusively to drafts or bills of exchange that have been made by us or to us, whether two-party or three-party. A draft is *accepted*, as is well known, by writing across its face the word accepted and the date, accompanied by the signature of the drawee. If it

NOTES RECEIVABLE DISCOUNTED

Debit with:	*Credit with:*
(*c*) Notes and acceptances when paid, that have been previously credited to this account.	(*a*) Notes and acceptances discounted at bank. (*b*) Notes sold or transferred to others.

FIG. 28

is drawn in our favor and accepted, we debit notes receivable or bills receivable, and credit the drawer or the person from whom it is received. If accepted by us, we debit the drawer because he has made a demand on us and credit notes payable or bills payable. Since notes are used more extensively than drafts, both are usually included in the same account.

62. Dishonored and Overdue Notes.—Notes dishonored by non-payment should be looked after carefully and removed from the notes-receivable account. It is not unusual to find overdue notes, especially in concerns that handle a great many promissory notes made by good customers. When they are past due, an entry should be made as follows:

Notes receivable overdue
    To notes receivable

This procedure recognizes correct classifications of items and the division of notes into good, past due, etc. Overdue notes should, of course, either be renewed or adjusted in some way in order to impress more effectively upon the maker the necessity of definitely deciding on a date for payment. Rightfully, dishonored notes should be charged back to the maker's account, along with all charges for interest, expenses, and protest fees. If the notes had already been discounted at the bank and had to be lifted by you, the following entries would be made on your books.

(1) Customer
        To cash, or bank
(2) Notes receivable discounted
        To notes receivable

63. Notes of Directors and Employes.—Notes of directors, officers, stockholders, and employes that do not represent actual business transactions should be kept separate from the regular commercial paper received from customers. A separate account for special notes receivable might be opened, though, of course, there is no serious objection to keeping them all in the regular notes-receivable account. If they are all kept together, regular reports should be made to the directors exhibiting the special notes receivable and the names of the makers in a schedule separate from notes of customers. This plan may be applied also to notes payable that have been given to other than regular trade creditors. The main object is to provide an accounting system that will exhibit true conditions by having separate accounts for special items. There has been too great a tendency in the past to put many dissimilar items into one account.

JOURNAL SIMPLIFIED

64. If the notes-receivable-and-payable book were kept as a principal book, the entries for notes received and given would not be recorded in the journal, but would be posted direct to the accounts of customers and creditors. If postings are made

ILLUSTRATIVE JOURNAL ENTRIES
(*In Case All Totals are Journalized Monthly*)
September 30, 1912

(1)	Accounts receivable	$1,200.00	
	To sales		$1,200.00
	Total sales for the month per sales book, Fig. 12.		
	NOTE.—The terms accounts receivable and accounts payable are used in this illustration in place of sales ledger account and purchase ledger account, simply to show a change of working.		
(2)	Purchases	2,400.00	
	To accounts payable		2,400.00
	Total purchases for the month per purchase book, Fig. 13.		
(3)	Notes receivable	500.00	
	To accounts receivable		500.00
	Total notes and acceptances received for the month per bill book, Fig. 23.		
(4)	Accounts payable	1,000.00	
	To notes payable		1,000.00
	Total notes and acceptances given for month per bill book, Fig. 23.		
(5)	Cash	5,155.00	
	To accounts receivable		155.00
	To general ledger (or sundries)		5,000.00
	Cash receipts for month per cash book, Fig. 11.		
(6)	Accounts payable	350.00	
	Expenses	410,00	
	General ledger	000.00	
	To cash		760.00
	Cash payments for month per cash book, Fig. 11.		

FIG. 29

from all principal books direct to the ledger, it will be seen that the journal is reduced to the recording of adjusting and cross-entries, if any, and monthly totals from the books of original entry. In this way, the entire business for the month is summarized in totals in the journal and presents a view of the

month's business. It thus conveys to the proprietor information that is of value to him. It will be seen that this plan carries the totals of all books into the journal; therefore, the aggregate debits and credits of all journal entries at any particular time should equal the aggregate debits and credits in the ledger accounts. This provides an additional proof of accuracy, but only in case the totals of accounts are taken into the trial balance. If balances are used, it is apparent that the aggregates will be different. If postings of totals are made from books of original entry, then, of course, the summary journal entries will not be needed. Assuming, however, that the postings are made through the journal, then the transactions for the month, as illustrated in the accompanying set, would appear in the journal as shown in Fig. 29.

When posting the entries shown the amount or amounts representing the general ledger should be checked and not posted, because they have already been posted from the cash book. When a cash account is kept in the ledger, only the monthly totals are posted thereto. It will therefore show at any time the receipts and payments for each month, as well as for the entire year up to the end of any particular month. It need not be ruled up until the end of the year.

OMISSION OF CONTROLLING ACCOUNTS

65. Special ledgers are frequently kept without the use of controlling accounts. This prevents confusion on the part of inexperienced bookkeepers who have trouble in manipulating the controlling accounts and in reconciling the various ledgers. The controlling accounts are frequently omitted even by experienced bookkeepers, in order to save time and to obviate the necessity of making extra entries. The head bookkeeper, however, often keeps a record on separate sheets of the amounts ordinarily required for the controlling account. This enables him to tell at the end of each week or each month the amount that should be in the subordinate ledger. For instance, the accounts receivable as on June 30, amount to $62,340.20. At the end of July they are determined as follows:

Balance July 1, 191_	$62,340.20	
Sales for July	90,425.40	
Journal debits	1,200.00	153,965.60
Cash credits for July	65,280.50	
Journal credits	2,260.40	67,540.90
Balance July 31		$86,424.70

This balance is used for completing the monthly trial balance, and should agree with the aggregate accounts receivable in the sales ledger. These monthly summaries may be kept on separate sheets, in a special book, or in the trial-balance book.

66. As has already been explained, only totals are posted to the controlling accounts, and the balance of such totals (debits and credits) must equal the details of the corresponding special ledger. When preparing the trial balance, it is necessary to incorporate therein the aggregate of all accounts appearing in the special ledger, which amount can be supplied by the ledger keeper. Therefore, since the amount needed to complete the trial balance can be supplied by the assistant bookkeeper (ledger keeper), it is often deemed advisable not to take the trouble of maintaining controlling accounts. The weakness of this plan lies in the fact that the head bookkeeper is, to some extent, at the mercy of his assistant because he cannot complete his trial balance until the assistant has summed up his individual accounts. This may take considerable time, and the amount obtained may not agree with the sum required to equalize the trial balance. The question then arises as to whether the head bookkeeper or his assistant erred in procuring results. This difficulty is obviated by the use of controlling accounts, and the assistant knowing that his chief already has the aggregate amount of his ledger accounts is more likely to be careful in adding them. Any change or error, intentional or otherwise, must necessarily result in a difference that can easily be traced by the checking process.

Sometimes it is thought advisable not to maintain controlling accounts in the subordinate ledgers, in order that the assistants may not have a knowledge of the amount required. Take the

MERCHANDISE ACCOUNT

1912					1912			
Dec.	31	Purchases to date (Details and dates)	$87,467	84	Dec.	31	Sales to date (Details and dates)	$57,894	89
		Profit	11,432	82	Dec.	31	Inventories:		
							Merchandise	16,676	17
							Customers' accounts	24,329	60
			$98,900	66				$98,900	66
1913									
Jan.	1	Merchandise on hand	$16,676	17					
Jan.	1	Customers' accounts	24,329	60					

FIG. 30

customers' ledger, for example. If the ledger keeper knows how much the total of customers' accounts should be, as would be disclosed by the controlling account, he might report that amount to his chief without a careful inspection of the accounts. If he does not know, he is more likely to exercise care in adding and listing the amounts, knowing that the head bookkeeper is aware of the amount required. This point is cited only as an illustration and not to cast any reflection on assistant bookkeepers.

SIMPLE METHOD OF HANDLING PERSONAL ACCOUNTS

67. Sometimes the customers' ledger is kept as an auxiliary book; that is, entirely independent of the general ledger. When time sales are made, entries are recorded in the accounts of customers in single-entry form, without any corresponding credit to merchandise. When payments are made by customers, such payments are included as part of the cash sales for the day in which the payments are received. Credits are recorded, of course, in the individual accounts of customers making the payments. At the time of closing the books, the aggregate of accounts receivable may be included in the inventory as merchandise on hand. As such, it must be entered as a credit to merchandise account, as if it were a regular inventory, and then brought below the ruling on the opposite (debit) side. As the merchandise sold has not been so recorded, it is presumed to be still on hand. In the case of bad debts, losses are charged to profit and loss and credited to the merchandise account. The entire plan is likely to encourage carelessness, because there is no check on the ledger, and for this reason it should not be used without the exercise of considerable care.

The merchandise account at the end of the first year will appear as shown in Fig. 30.

ANALYSIS OF ACCOUNTS
(PART 2)

LEDGER ACCOUNTS

CLASSIFICATION AND ARRANGEMENT

1. The fact that a set of books shows the exact condition of the business is not sufficient. The books must be logically planned and kept, and the ledger should be so arranged as to exhibit the business records in proper sequence. The space in the ledger should be properly apportioned, and each class of accounts should have a definite location, so that it will not be possible for any account to be overlooked. Accounts of a like nature should always be grouped together.

With these facts in mind there are here considered plans for the arrangement of ledger accounts that may be adapted to the needs of any business, whether large or small. Of course the order given is not always followed, but whatever plan is used should be logical and then followed out systematically. Some accountants begin with fixed assets and end with current assets or cash, and others follow the reverse order, beginning with those most readily available and ending with the least available. The liabilities then follow in succession, but in like order with the assets. Many prefer to have the capital accounts at the beginning of the ledger, yet others list them with the liabilities. The nominal or profit-and-loss accounts generally follow the assets and liabilities, and in turn should be logically

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arranged. The balance sheet and the statement of profits and losses should also be arranged in a logical manner, similar to the plan followed in the ledger, and the trial balance should exhibit a like arrangement.

2. By means of the several accounts, the ledger furnishes a condensed summary of the business and represents as the *principal book* all other books that contribute to the history of the transactions.

The kind of accounts suited to the needs of the business should be determined first, and then these accounts should be classified and arranged in the ledger in a logical manner; also, unless the ledger is loose-leaf, the number of pages needed for each account should be decided on and left blank, depending, of course, on the number of years it is designed to last. It is advisable to leave a few pages between groups for the accommodation of new accounts, and the trial balance should make like provision for the listing of tardy arrivals.

3. The ledger accounts may be classified into three general groups and in the following order: *capital*, *real*, and *nominal accounts*. The real accounts are also known as *balance-sheet accounts*, and the nominal as *profit-and-loss accounts*. The outlines that follow are taken from actual business ledgers and may be expanded or condensed to suit individual needs, so long as the general groups are maintained.

1. *Capital Accounts.*—For a single proprietor, the capital account should be opened first, followed by the private or withdrawal account.

For two or more proprietors, separate capital accounts should be opened successively, followed by the private or withdrawal account of each.

For a corporation or a stock company, the capital account should be opened first, followed successively by unsubscribed stock, surplus, undivided profits, dividends payable, etc.

2. *Real Accounts.*—The section of the ledger for real accounts may be divided into three parts for further convenience, as follows: (1) Stocks and bonds (or other securities), bills and notes receivable, furniture and fixtures, real estate, bills payable and

mortgages payable; (2) sales-ledger controlling account, containing book accounts receivable; (3) purchase-ledger controlling account, containing book accounts payable. If all personal accounts are placed in the ledger, they should follow the nominal accounts; then the controlling accounts would be omitted.

3. *Nominal Accounts.*—To show income and expenses incident to a retail or a jobbing business, ledger accounts should be opened in the following order: Merchandise sales, allowances on sales (including cash discounts if desired), freight and cartage outbound, merchandise (inventory), merchandise purchases (including cash discount if desired), freight and cartage inbound, advertising, salesmen's salaries and commissions, sales expenses, insurance, real-estate expenses, office salaries, office supplies, office expenses. The foregoing accounts up to and including sales expenses may be closed into the merchandise account or a trading account, and when such account is used it follows them in the ledger. Discount and interest (bank discount and use of money), management expenses, and bad debts follow in order, and the merchandise accounts (or trading accounts when used) are closed directly into the profit-and-loss account, which should include the group of nominal accounts. Sometimes the profit-and-loss account follows the capital group.

In a manufacturing business, it is necessary to open an account for material, supplies, factory wages or labor, factory expenses, and kindred charges. These accounts should be closed into manufacturing account, and should precede the accounts that comprise the trading account. The manufacturing account, when used, closes into the trading account.

4. Suggested Arrangement of Ledger Accounts.—The accompanying arrangement of ledger accounts will be found of practical value. If the personal accounts with customers and creditors are to be kept in the general ledger, they should be shown in the concluding part of the book, leaving as many pages as may seem necessary for each group. The accounts receivable may be placed near the center of the ledger, and they may be followed by the accounts payable, leaving enough pages for new accounts with customers.

- **Group 1 Capital Accounts**
  - (*a*) Individual or partnership
    - Capital account (each proprietor)
    - Withdrawal account (each proprietor)
  - (*b*) Corporation or stock company
    - Capital stock
    - Unsubscribed stock
    - Surplus
    - Undivided profits
    - Dividends payable
- **Group 2 Real Accounts**
  - (*a*) Assets
    - Real estate
    - Plant and machinery
    - Furniture and fixtures, etc.
    - Stocks and bonds or other securities
    - Bills receivable
    - Sales-ledger controlling account
  - (*b*) Liabilities
    - Bills payable
    - Purchase-ledger controlling account
    - Mortgage payable
- **Group 3 Nominal Accounts**
  - (*a*) Manufacturing accounts
    - Material
    - Supplies
    - Factory wages
    - Factory expenses and kindred charges
  - (*b*) Trading accounts
    - Manufacturing account
    - Sales account
    - Allowances on sales (including cash discounts)
    - Freight and cartage outbound
    - Merchandise (inventory)
    - Purchases account
    - Allowances on purchases (including cash discounts)
    - Freight and cartage inbound
    - Advertising
    - Salesmen's salaries and commissions
    - Sales expenses
    - Insurance (exclusive of real estate)
  - (*c*) Profit-and-loss accounts
    - Real-estate expenses (taxes, water rates, insurance, interest on mortgage, and repairs)
    - Office salaries
    - Office supplies
    - Office expenses
    - Trading account
    - Discount and interest (bank discount and use of money)
    - Management
    - Bad debts
    - Loss-and-gain account (or profit and loss)

5. Arrangement of Ledger Accounts for a Mercantile Establishment.—The following outline of ledger accounts for a mercantile establishment is made up simply as an illustration. It could be extended considerably; indeed, it might even be changed materially by shifting accounts from one section to another or by making greater division of the headings.

Capital and Net Worth:
- Capital stock, common
- Capital stock, preferred
- Unsubscribed stock
- Treasury stock
- Subscriptions
- Surplus
- Undivided profits
- Profit and loss

Fixed Assets:
- Land
- Buildings and equipment
- Furniture and fixtures
- Delivery equipment
- Office
- Interior alterations
- Good-will
- Sinking fund, if any

Current Assets:
- Petty-cash fund
- Cash in bank
- Accounts receivable
- Notes receivable
- C. O. D. accounts
- Will-call accounts
- Approval accounts
- Inventories
- Consignments, agents or branches
- Investments, securities, etc.

Deferred Charges to Operation:
- Incorporating expenses, if any
- Interest prepaid
- Insurance premiums prepaid
- Salaries advanced
- Advertising prepaid
- Office supplies
- Stable supplies

Fixed Liabilities:
- Bonds payable
- Mortgages
- Other long-time loans

Current Liabilities:
- Accounts payable
- Notes payable
- Agents or branches
- Accrued pay roll
- Accrued salaries
- Accrued interest, specified
- Accrued taxes
- Accrued rates, etc.
- Dividends
- Other liabilities

Reserve Accounts:
- Reserve for sinking fund, if any
- Reserve for depreciation (one for each kind of property)
- Reserve for discounts
- Reserve for bad debts
- Reserve for expenses, etc.

Earnings:
- Sales of merchandise
- Income from investments
- Income from rentals, if any
- Discount on purchases
- Other income

Costs and Selling Expenses:
- Purchases
- Freight inbound
- Freight outbound
- Shipping and delivery expenses
- Salaries of salesmen
- Salaries of clerks
- Traveling expenses
- Commissions to agents

Costs and Selling Expenses:
- Advertising
- Postage and supplies
- Portion of delivery expenses
- Miscellaneous
- Returns, rebates, allowances

General and Administrative Expenses:
- General expenses
- Office expenses
- Legal expenses
- Salaries to officers
- Salaries of office help
- Rent, if necessary
- Repairs and maintenance of property owned
- Insurance premiums
- Depreciation of properties
- Interest and discount
- Telegraph and telephone
- Heat, light, etc.
- Memberships and subscriptions
- Bad debts
- Donations and charity
- Miscellaneous

6. Arrangement of Accounts for a Small Department Store.—In connection with the following arrangement of ledger accounts for a small department store, it will be found advisable to note the terms used and the order in which accounts are placed. Current cash means undeposited cash. The accounts are numbered, but the numbers do not necessarily mean the pages, unless the loose-leaf ledger is used.

ACCOUNTS SHOWING ASSETS

	Account No.		Account No.
Cash:		Merchandise Stocks:	
Imprest funds	1	A—Men's	12
Current cash	2	B—Boys'	13
Bank accounts	3	C—Furnishings	14
Notes Receivable:	4	D—Hats and caps	15
Accounts Receivable:		E—Boots and shoes	16
Charge customers	5	F—Cloaks and suits	17
C. O. D.'s	6	Furniture and Fixtures:	
Will call's	7	General stores	18
Approvals	8	New cloak department	19
Employes	10	Deferred Expenses, Prepaid:	20
Sundry debtors	11	Total assets	

LIABILITIES AND CAPITAL

	Account No.		Account No.
Accrued Expenses Unpaid:	21	Accounts Payable:	
Accrued Salaries and Labor:	22	Purchase creditors	25
Notes Payable:	23	Sundry creditors	26
Notes Receivable, Discounted:	24	Proprietor, special	27

	Account No.
Reserves:	28
Loss and Gain:	
This month	29
To the first of this month	30
Dividends:	31
Impairment and Surplus:	32
Capital Stock:	33
Total liabilities	
Revenue from Sales:	
A—Men's	
B—Boys'	
C—Furnishings	
D—Hats and caps	
E—Boots and shoes	
F—Cloaks and suits	
Revenue from Other Sources:	
Discounts on purchases	
Interest earned	
Miscellaneous earnings	
General and Trading Expenses:	
Advertising contracts	
Advertising, miscellaneous	
Bad debts and collection charges	
Bank exchange	
Cash discounts allowed	
Cash shorts	
Car fares, lunches, etc.	
Charities and donations	
Commercial-agency subscriptions	
Collection expense	
Delivery service	
Departmental sundries	
Depreciation of furniture and fixtures	
Depreciation of improvements	
Depreciation of merchandise stock	
Elevator service	
Freight, express, and cartage—"In"	
Freight, express, and cartage—"Out"	
Heat, light, and power	
Incidentals	
Insurance	
Interest in advance	
Interest accrued	
Legal expenses	
Memberships and dues	
Messenger service	
Office supplies and expenses	
Postage	
Premiums and commissions	
Rebates and allowances	
Rent	
Repairs to buildings	
Repairs and renewals to furniture, etc.	
Salaries of office	
Salaries of officers	
Salaries of salespeople	
Special expense	
Stationery and printing	
Taxes	
Telephone and telegrams	
Trading stamps	
Traveling expenses	
Work account	
Wrapping paper, twine, etc.	

7. Schedule of Accounts for a Manufacturing Company.—The numbers at the left in the following schedule of accounts for a manufacturing company indicate the page on which the accounts are contained. As will be observed, more than one page is allotted to some of the accounts and several pages are left between some of the groupings for the addition of new accounts when necessary.

Permanent Accounts:
FOLIO
1 Real estate and buildings
3 Machinery and fixtures
5 Boilers and engines
7 Tools
9 Trade marks, patents, good-will, etc.
10 Office furniture and fixtures
Capital Stock Accounts:
12 Preferred stock
13 Common stock
Contingent Accounts:
14 Organization expenses
15 Subscription account (preferred stock)
16 Depreciation account
Current Liability Accounts:
18 Audited accounts payable
21 Bills payable
24 Open (creditor) accounts
43 Dividends (preferred stock)
46 Accruing taxes
Current Asset Accounts:
54 Cash
55 Bills receivable
56 Contingent fund
57 Open (debtor) accounts
132 Sundry accounts receivable
Stock Accounts:
137 Manufactured stock
134 Stock in process of manufacture
141 Unmanufactured stock
143 Stationery supplies stock
145 Factory supplies stock
147 Fuel

Labor Accounts:
FOLIO
154 Machine shop
156 Wood-working shop
158 Condenser shop
160 Winding
162 Electroplating shop
164 Assembling room
166 Miscellaneous
Deferred Accounts:
170 Prepaid expenses
172 Prepaid interest
174 Prepaid insurance
175 Prepaid taxes
General Accounts:
178 Profit and loss
180 Surplus and undivided profits
181 Sales account
General Factory Accounts:
185 Repairs and renewals
187 Real-estate expenses
189 General factory expenses
191 Expired insurance
193 Expired taxes
195 Teaming expenses
General Office Accounts:
200 Officers' salaries
202 Clerks' salaries
204 Traveling expenses
205 Legal expenses
207 Postage, stationery, and printing
209 General expense
211 Interest
212 Advertising
206 General taxes

TRIAL BALANCE AND EXPENSE-ANALYSIS SHEETS

TRIAL BALANCE

8. In double-entry bookkeeping, the debits and credits of the ledger are supposed to be equal; consequently, the ledger is said to be constantly in balance. A **trial balance** is made from time to time for the purpose of testing its equilibrium, and it contains a schedule of all accounts remaining open at a particular time. While the trial balance is designed primarily as a ledger test, it serves another purpose also. The items compose a summary of the ledger accounts, and thereby present in a condensed form amounts that convey considerable information to the proprietor of the business. Instead of having monthly business statements made out, as is frequently the case, the desired information can be obtained from the trial balance. The arrangement of ledger accounts should of course be systematic in order that accounts showing like results may be in groups. The same order should obtain in the trial balance as in the ledger, as it will facilitate work at the end of the year when statements and closing entries are being made. It should be taken off at least once a month, if not more frequently, in order to be sure that the ledger is in balance; but, of course, the fact that it is in balance does not mean that errors have not been made. It is possible that entries may have been posted to the wrong accounts, that computations have been wrongly made, etc. Sometimes errors that offset one another are made, and these may not be detected when making the trial balance. For example, an error on the debit side may be offset by a corresponding error on the credit side. As a precautionary measure, frequent checking of entries should be made by the bookkeeper, in order to be sure that the entries are made properly and to the proper accounts.

9. In setting up the trial balance, it is advisable to leave occasional lines vacant for the insertion of accounts that may

RECAPITULATION OF TRIAL-BALANCE SHEETS

Page	January 31, 1912		February 29, 1912		March 31, 1912		April 30, 1912	
	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.
1	$ 98,329.40	$116,988.40	$ 92,377.47	$111,376.77				
2	43,624.85	39,464.70	59,868.71	70,121.60				
3	74,310.35	26,342.15	63,998.90	32,868.21				
4	52,143.90	82,971.27	59,864.13	93,986.73				
5	39,218.16	41,860.14	67,321.14	52,488.18				
6			17,411.14					
	$307,626.66	$307,626.66	$360,841.49	$360,841.49				

FIG. 1

be opened during the year. A similar space is left in the ledger for the accommodation of tardy arrivals, and, of course, the corresponding location should be taken. Trial-balance books ranging in size to meet the needs of any business may be obtained at stationery stores. They sometimes have a page or two at the back for the recapitulation of totals from the various sheets, in case the trial balance covers several pages. In such a case, each page is added and carried separately to this summary. Sometimes the various pages are added together cumulatively; that is, the total from the first page is carried on to the second, the total of the second, in turn, to the third, and so on. When this plan prevails, however, an error on the first page necessitates an alteration of amounts in all the subsequent pages. This is obviated, as will be seen, by carrying the total of each page sepa-

rately to a recapitulation. The totals of the various pages added together give the grand total of the trial balance. This is continued across the page from month to month, as shown in Fig. 1.

10. Sometimes separate sheets are used for the trial balance, in which case the various sheets are fastened together when it is completed. The names may be printed or typewritten, with space left for the insertion of amounts. In the continued trial balance there are columns, of course, for each month extending over a period of 6 or 12 months. This is usually the case in the books just referred to. When the ledger is subdivided, it will be seen that there are fewer accounts in each, in which case the trial balance is not likely to exceed more than one or two pages. The trial balance of each ledger may then be made separately on loose sheets, and bound together when completed. As a rule, the balances of personal accounts receivable and payable are added on the adding machine, and sometimes they are all written down for presentation to the directors. The total of all accounts, for example, in the sales ledger, should equal the accounts-receivable account in the general ledger. If it does not, then some error has apparently been made that will necessitate further investigation. Where a safeguard ledger is used the trial balance is not necessary. The recapitulation of sheets is shown in Fig. 1.

EXPENSE-ANALYSIS SHEET

11. Elsewhere it is stated that the general-ledger accounts should be reduced to as few in number as possible, and that separate ledgers should be used for details of the controlling accounts. This principle is being adopted quite generally where separate details of the sales or administrative expenses are desired, and in many cases **analysis sheets** are used instead of a special ledger. The analysis sheet or book should have at least twelve columns to represent the months of the year, and the names of expense items to be analyzed should be written in the margin at the left-hand side of the page. The outlay for expenses is analyzed each month in the column opposite

the accounts appended, and the total of the column should equal the total monthly charge to expense, as shown in the general-ledger account. This form can be utilized to analyze any account of the ledger, whether income or expense, as manufacturing expenses, repairs, maintenance of real estate, income from investments, etc. It is convenient, forms a monthly comparison, reduces the trial-balance accounts to a minimum, and obviates the necessity of keeping numerous columns in the

EXPENSE ACCOUNT

191—										
Jan.	31	Cash	$ 350	50						
Jan.	31	Sundries, J.	30	20						
Feb.	28	Cash	385	10						
Mar.	31	Cash	352	60						
Mar.	31	Sundries, J.	23	90						
			$1,142	30						

FIG. 2

cash book. Indeed, a special book instead of sheets might be used for the analysis of the various classes of expense accounts, as manufacturing expenses, selling expenses, and administrative expenses.

12. It is not uncommon to have ledger accounts divided into several columns for the separation of items contained therein, in which case the account would be ruled and columns headed as shown in the analysis sheet. Such an account, however, would show the separate items charged up daily or weekly, while the sheet shown in Fig. 2 contains only monthly totals. The expense ledger could be omitted and analysis sheets substituted, or else the expense account itself divided into columns.

In case the cumulative amount of expenses is desired from month to month, extra columns are required to show the aggregate expenses up to and including any particular month of the year. This is a most desirable plan, and requires a book or a sheet of at least twenty-four columns. See Fig. 3.

EXPENSE-ANALYSIS SHEET

191— Monthly Analysis of General Expense Account—(page 68)

Accounts	January	February	Total to Date	March	Total to Date	April	Total to Date	
Advertising	$ 30.00	$ 50.50	$ 80.50	$ 35.00	$ 115.50			
Heat and light	10.60	15.80	26.40	19.75	46.15			
Dues and subscriptions	25.00	5.00	30.00	10.00	40.00			
Insurance and taxes	82.40	35.00	117.40	15.00	132.40			
Expenses, office	12.25	32.45	44.70	26.10	70.80			
Rent	100.00	100.00	200.00	100.00	300.00			
Printing and stationery	10.45	23.85	34.30	36.90	71.20			
Postage	10.00	12.50	22.50	8.75	31.25			
Salaries	100.00	110.00	210.00	125.00	335.00			
Total	$380.70	$385.10	$765.80	$376.50	$1,142.30			

NOTE.—Regular rulings for dollars and cents columns are usually contained on the prepared sheets. They can be kept in a binder to good advantage. The account is on page 68 of the general ledger.

FIG. 3

13. Sometimes a slightly different plan is used, but with the same kind of ruled sheets. It consists in heading the columns with the various expense accounts to be analyzed and in using the left-hand margin for the twelve calendar months. This plan can be made cumulative also by using every second horizontal line for cumulative totals.

14. The use of analysis sheets can be applied in almost any line of business, and they are especially useful in a manufacturing establishment in which the analyses of costs are desirable. Indeed, its use can be extended to any part of the business and particularly to dividing manufacturing, selling, and administrative charges; it can be used to advantage also in separating items of charge or of credit among various departments. Sometimes a separate analysis sheet is made out for each month. In this case it would seem preferable to head the columns with the departments or accounts, and then show the items and dates on the left-hand margin. It is not unusual to find comprehensive analysis sheets made to order and with printed headings for the various accounts. They may contain from ten to thirty columns, and are usually placed in a loose-leaf binder. Each sheet should be numbered, and prominently headed to show the month and year to which it belongs.

TRADING AND PROFIT-AND-LOSS ACCOUNTS

REMARKS

15. Business is conducted for profit. Books of account are kept for the purpose of recording the business transacted and to supply the proprietor with such information as he may desire for the proper administration of his business. He should be able to determine at any time the value of business transacted, whether the concern is making a profit or sustaining a loss, the status of its financial condition, and the relative progress being made as compared with previous years. To provide this information requires an efficient accounting system and bookkeeping records that are always kept up to date.

It is obvious that to determine the condition of the business at any time necessitates a careful subdivision of accounts, as well as a continuous record of purchases, sales, inventories, income, costs, and expenses. When this is done, an analysis of the elements can be made without unnecessary delay. In a large company, a complete system may be maintained, but in a small business where one bookkeeper does the work it is apparent that such a system is inadvisable or impracticable. It is unwise to make numerous divisions and to attempt a laborious arrangement of details unless they are to serve some useful purpose. To make comparisons of amounts and results from year to year, it is of course necessary to follow the same plan of arranging and subdividing in each succeeding year.

16. The details of earnings, expenses, etc. are summarized in the profit-and-loss account, which is known also as the loss-and-gain account, the revenue account, the income account, etc. This is a collective ledger account into which are compiled at definite fiscal periods—yearly, half yearly, or quarterly—the various separate accounts that reflect the increase or the decrease in net wealth as a result of the company's business operations for a given period. After all the items of income and expenditure are closed into it, there must result a profit or a loss, which, in turn, is carried to the personal account of the proprietor or to the undivided-profits account of the corporation.

The profit-and-loss account is usually divided into sections for the purpose of enabling the merchant or the manufacturer better to analyze results and make yearly comparisons, thus enabling him to locate more readily the causes of any unusual increase or decrease in the year's net earnings. These sections are usually known as the trading account and the profit-and-loss account, as described later, and of course each section is made up of the various accounts applicable thereto.

ELEMENTS OF INCOME AND EXPENDITURE

17. The income of a trading business is generally derived from sales of goods, from interest and discount, from dividends on investments, etc. Offsetting the income are, of course, the cost of merchandise sold and the various selling and administrative expenses, the balance being the net profit or the net loss. In order to show this profit or loss, the various accounts concerned are closed at regular intervals, as just suggested. At that time only the nominal or profit-and-loss accounts are adjusted or closed. The elements composing these accounts follow.

18. Elements of Income.—In the following list are included some of the more common items of income to be found in a trading business; that is, one that conducts the purchase and sale of merchandise but does no manufacturing. The manufacturer, of course, must first have taken the raw materials and made them into the finished product for the merchant. The elements here given will be used for developing the accounts later on.

Sales of merchandise
Sales of supplies
Income from investments
Interest and discount
Miscellaneous

19. Costs and Direct Trading Charges.—Under costs and direct trading charges are included the charges that comprise the cost of merchandise purchased up to the time when the goods are ready for sale. They are as follows:

Purchases of merchandise
Commission to purchasing agents
Freight inbound
Duties and entry charges
Warehouse wages and expenses
Warehouse supplies
Other direct charges

20. Selling Expenses.—The selling expenses include the expenses incurred in disposing of the goods. By means of them it is possible to determine the exact cost incurred in disposing of the merchandise. They may not all be needed

in any one business, and some of them may even be modified considerably.

Wages of salesmen	Delivery expenses
Expenses of salesmen	Expenses of packing and shipping
Commissions to salesmen	Storage charges
Traveling expenses of salesmen	Rebates and allowances
Samples of goods	Discounts on sales
Advertising	Rent of store and warehouse
Freight outbound	Insurance of stock, etc.

21. General and Administrative Expenses.—The general and administrative expenses have reference to the general management expenses of the business, such as salaries of the managers and office employes and the various office expenses that cannot be definitely apportioned. In addition to these, there are general expenditures that are chargeable to the business as a whole, as insurance, depreciation, bad debts, interest, and discount. Some of the accounts included in this list are:

Salaries to officers and managers	Interest and discount
Salaries to office employes	Depreciation of properties
General business expenses	Light, heat, and power
General office expenses	Taxes, insurance, and subscriptions
Traveling expenses	Donations and contributions
Office supplies and postage	Rent of offices
Telegraph and other charges	Discount on sales
Stationery and printing	Miscellaneous charges

22. Subdivision of Charges.—The items just mentioned may be contained in separate accounts, or several of a like nature may be included in one account. The size of the business and the number of bookkeepers will govern to some extent the advisable subdivisions; yet it is prudent, even in a small business, to have the accounts so classified that full information pertaining thereto can be obtained without too much delay. Specific details are not entered into in the explanations. Brief details of a few accounts and the conditions under which they are debited and credited follow, but it is obvious that all the accounts need not be presented, as most of them are handled in the same manner. These explanations pertain to the ledger accounts and to the manner of closing them. The preparation of statements is explained and illustrated separately.

MERCHANDISE ACCOUNT

23. In a trading or a selling business, the merchandise account is the most important, so far as profits are concerned. It consists of goods on hand at the beginning of the year plus purchases and inbound-freight charges, minus goods on hand at the end of the year. The inventory price, or quotation, usually includes the cost of transportation inward, though sometimes that is kept separate. Sales are credited, less rebates and allowances. Sometimes all these debits and credits are included

TRADING ACCOUNT

Debit with:	*Credit with:*
Merchandise on hand at the beginning of the fiscal period. (It is either in the inventory account or already in this account.)	The net sales at the close of each fiscal period, as indicated by the balance of the sales account.
The net purchases at the close of each fiscal period, as indicated by the balance of the purchases account.	The inventory of goods on hand at the end of the fiscal period, which after closing will be carried below on the debit side. (This may if desired be deducted from the debit side before the balance is determined.) If a separate inventory account is kept, the final inventory will be shown in it and not here.
Freight, inbound, duty and other direct charges to goods purchased, at the end of each fiscal period, if they are not included in the purchases.	
The balance at the end of the fiscal period, which in turn should be transferred to the profit-and-loss account.	
This balance represents the gross profit on trading.	

FIG. 4

in one merchandise account, but it is apparent that this is not good practice. Modern account keeping prescribes careful subdivision and scientific classification.

As a rule, three accounts are kept for recording merchandise. They are: (1) The *trading account*, which contains the inventory at the beginning and the end of the year, and into which are closed at the end thereof the purchases and sales and other accounts closely related thereto; (2) the *purchases account*, which

includes all purchases, less allowances, and sometimes the freight and other inbound charges; and (3) the *sales account*, which contains a record of all sales, less allowances.

Sometimes the trading account is charged or credited with other items that are closely related to the merchandise, but in this respect the accountant must use his own judgment. It will be seen that the trading account is not necessarily an active account, but it is opened at the end of each fiscal period for the purpose of summarizing the items pertaining to merchandise.

24. Trading Account.—The trading account is debited and credited in the manner shown in Fig. 4.

In case a perpetual or a running inventory is kept, the trading account either is not kept or loses much of its usefulness,

PURCHASES ACCOUNT

Debit with:	*Credit with:*
Merchandise purchased for trading purposes.	Merchandise returned to persons from whom purchased.
Freight and cartage inbound.	Rebates and allowances for shortage, damage, etc.
Duty, storage, and other direct charges that comprise a part of the cost thereof.	Merchandise taken at cost from stock and shipped to an agent, branch, or commission merchant.
	The balance, net purchases, at end of each fiscal period is transferred to the trading account.

FIG. 5

because if the sales account represents gross profit it is obvious that such profit would be credited directly to profit and loss. See explanation under sales and purchases accounts, which follow. After the trading account is ruled up the inventory is brought below the ruling on the debit side.

25. Purchases Account.—Fig. 5 shows the manner in which the purchases account would be debited and credited.

If a perpetual inventory is kept, the purchases account is credited at the end of each month or each fiscal period with the cost of goods sold, which cost is in turn debited to the sales

account. In such a case, the balance of this account is an asset, as it represents the cost of goods on hand.

26. Sales Account.—The sales account is debited and credited as shown in Fig. 6.

If a perpetual inventory is kept, the sales account is debited at the end of each month or each fiscal period with the cost of goods sold, in which case the balance of this account shows the gross profit for the period under review, and is in turn credited to the profit-and-loss account.

27. Returned Merchandise.—By *returned merchandise* is meant goods returned to or by us. It may be entered in separate accounts for returned purchases and returned sales, or

SALES ACCOUNT

Debit with:	*Credit with:*
Merchandise returned from customers.	Merchandise sold to customers.
Rebates and allowances for shortage and damaged goods if they are not entered to separate accounts.	Merchandise shipped to an agent, branch, or commission merchant, if billed at the selling price. (Sometimes goods thus sent are credited to the consigned-goods account.)
The balance, net sales, at the end of each fiscal period is transferred to the trading account.	

FIG. 6

else entered directly into the purchases and sales accounts. If separate accounts are kept, they should be closed at the end of each fiscal period against the sales or the purchases, as the case may be. If goods returned to us are in good condition, but not acceptable to the customer, they may be returned to stock; otherwise, a loss will have been incurred. Returns made in the period subsequent to that in which they were sold should, of course, be charged back against the surplus account of that period. If the amount is small, however, it may be entered in the current year.

With reference to the *returned sales account*, debit this account and credit customers, at the sale price, for all goods returned. At the end of each fiscal period close it into the sales account.

In connection with the *returned purchases account*, credit this account and debit creditors, at the purchase price, for all goods returned. At the end of each fiscal period close it into purchases account.

INTEREST AND DISCOUNT

28. Interest is the allowance made or money paid from one person to another for the use of money or credit. **Discount** is an allowance or deduction made for the payment of a debt before it is due. The use of money is always worth the current market value, as indicated by the prevailing rate of interest, and the person deprived of the use of his money for any length of time is entitled to compensation for its use from the person

INTEREST AND DISCOUNT

Debit with:	*Credit with:*
Interest accrued and owing to us at the beginning of business, or the fiscal period, and which will be received later.	Interest accrued and owing to others at the beginning of business, or the fiscal period, and which will have to be paid later.
Payments or allowances of interest on notes, accounts, loans, bonds, etc.	Receipts or allowances of interest on notes, accounts, loans, bonds, etc.
Discounts paid or allowed to others on notes, accounts, etc.	Discounts paid or allowed to us on notes, accounts, etc.
Interest accumulated on notes, accounts, loans or bonds received by us or transferred to us.	Discount on notes, accounts, loans or bonds transferred to us before maturity.
At the close of each fiscal period, accrued interest owing to others, as shown by the inventory lists.	At the close of each fiscal period, accrued interest owing to us, as shown by the inventory lists.

FIG. 7

holding or using it. Interest and discount are practically synonymous terms, and they are so used in business. There is, however, a distinction to be drawn between the different kinds of discount. *Bank discount* has reference to interest or discount allowed to the bank or to individuals, and it is usually computed at a certain rate per cent. per annum. *Trade discount* has reference to a trade or a general discount allowed by

merchants to their customers. *Cash discount* has reference to deductions made from invoices for prompt payment by customers within a specified time, as 10 days, 20 days, etc. *Interest on notes, accounts, mortgages,* and *bonds* usually appear in the same account, though it is not unusual to find a separate account for bond interest. The outline shown in Fig. 7 indicates the conditions under which interest and discount are debited and credited.

The balance of the interest-and-discount account is closed into the profit-and-loss account at the end of each fiscal year. The inventories of accrued interest are then brought below the rulings on the sides opposite to those on which they are entered in the account before closing.

29. Accrued and Prepaid Interest.—Instead of entering accrued interest and prepaid interest into the interest account, as just shown, these items are frequently entered into a special account used for that purpose, as accrued interest receivable (or payable), sundry accrued and prepaid items, sundry asset inventories, or some other appropriate heading. At the end of each fiscal period this account is debited with all accrued or prepaid interest and other charges, and a credit is made to profit and loss or to the regular interest account before it is closed. The account is credited at the end of each fiscal period for the amounts previously charged to it, which amount is debited to profit and loss, or to the regular interest account before it is closed. A separate account should, of course, be opened for contra items as accrued interest and operating charges owing to others. If it is deemed inadvisable to group unlike items, then interest should be kept in an account by itself.

30. In case monthly profit-and-loss statements are required, a slightly different procedure is necessary, especially in case the ledger accounts are to be adjusted and kept in harmony with the statements. If the interest accrued or prepaid is to cover more than 1 month, it is apparent that only the portion chargeable to the current month should be taken. In such a case the accrued or prepaid interest should be entered into an account

called interest prepaid or interest accrued, and at the end of each month it should be credited and the interest account or the profit-and-loss account charged for the required amount. The balance represents prepaid interest and is an asset. At the end of each succeeding month the required amount should be charged off in a similar manner. The same plan is necessary for accrued interest payable. This procedure can be followed also with taxes, insurance premiums, depreciation, and other prepaid charges that are to be distributed over a series of months.

MANUFACTURING, TRADING, AND PROFIT-AND-LOSS STATEMENTS

GENERAL EXPLANATION

31. The preceding matter has particular reference to ledger accounts. It is now in order to discuss the business or operating statements that are usually compiled therefrom at regular periods for the special benefit of the proprietors or directors. These statements vary to some extent to conform to the kinds of business and to coincide with the ideas of the accountant. The proprietor usually desires a *balance sheet of assets and liabilities*, which is explained later, and a *profit-and-loss statement*. The latter statement is generally divided into two or three sections, namely, the *manufacturing section*, the *trading section*, and the *profit-and-loss section*. Of course, in a purely trading or selling business where there is no manufacturing, it is obviously unnecessary to prepare a manufacturing statement. Sometimes these statements are referred to as accounts; as, *trading account*, *profit-and-loss account*, etc., but this is generally left to the tastes of the accountant.

32. The manner of preparing and apportioning items to the different divisions can best be illustrated by means of a few transactions. Thus, the following transactions are used to

show how the trading and profit-and-loss statements of a selling business may be worked out:

Inventory of merchandise, January 1, 1912	$10,000.00
Purchases during year	18,000.00
Freight and duty	1,100.00
Warehouse wages and expenses	3,100.00
Sales during year	36,000.00
Discount and allowances on sales	1,200.00
General expenses	2,800.00
Salaries	6,400.00
Rent	4,000.00
Inventory of merchandise, December 31, 1912, including portion of freight, duty, etc.	12,400.00

33. Trading Statements of a Selling Business.—Figs. 8 and 9 show two trading statements. The one in Fig. 8 shows the various elements chargeable thereto, but it is not sufficiently analyzed to convey the information usually desired. In the form shown in Fig. 9 the items are more carefully grouped into

TRADING STATEMENT—(First Form)

Debits		*Credits*		
Inventory, January 1, 1912	$10,000.00	Sales	$36,000.00	
Purchases	18,000.00	Less discounts and allowances	1,200.00	
				$34,800.00
Freight and duty	1,100.00			
Warehouse charges	3,100.00			
Gross profit carried to profit-and-loss statement	15,000.00	Inventory, December 31, 1912		12,400.00
	$47,200.00			$47,200.00

FIG. 8

divisions for statistical and comparative purposes. These divisions permit of careful percentage analyses also. It will be well to notice how the closing inventory is handled in each case. As will be seen, the gross profit is the excess of the selling price over the cost of merchandise disposed of.

34. Profit-and-Loss Statement of a Selling Business. After the gross profit is transferred to the credit side of the profit-and-loss statement, it is debited with the remaining

TRADING STATEMENT—(Second Form)

Debits			*Credits*	
Goods on hand, January 1, 1912		$10,000.00	Sales	$36,000.00
Purchases	$18,000.00		Less discounts	1,200.00
Freight and duty	1,100.00		Net sales	34,800.00
Warehouse charges	3,100.00	22,200.00		
Total charges		32,200.00		
Less inventory, December 31, 1912		12,400.00		
Cost of goods sold		19,800.00		
Gross profit carried to profit-and-loss statement		15,000.00		
		$34,800.00		$34,800.00

FIG. 9

expenses. The difference is the net profit or the net loss for the fiscal period and, in turn, it is transferred to the proprietor's account. It is shown also in the balance sheet. The form

PROFIT-AND-LOSS STATEMENT

Debits		*Credits*	
General expenses	$ 2,800.00	Gross profit from trading statement	$15,000.00
Salaries	6,400.00		
Rent	4,000.00		
Total expenses	13,200.00		
Net profit	1,800.00		
	$15,000.00		$15,000.00

FIG. 10

shown in Fig. 10 illustrates the manner in which this statement is handled.

35. Manufacturing Statement.—The manufacturer's business is to purchase raw material and make it up into finished

articles for sale to the wholesaler or the trader. To do this necessitates a varied list of costs and expenses that are not required in a trading business. If the company makes its own products, then there results a combination of manufacturing and trading. In such a case, the two statements already illustrated would be preceded by a manufacturing statement. By revising and adding to the summary of transactions given in Art. **32,** it is possible to compile the manufacturing statement. Thus, use is here made of the following summary of transactions for a manufacturing and trading business:

Inventories January 1, 1912:	
Raw materials	$ 6,000.00
Goods in process	3,000.00
Finished goods	10,000.00
Transactions for year:	
Purchases of material	5,800.00
Freight and duty	1,100.00
Factory expenses	3,100.00
Rent of factory	4,000.00
Wages to workmen	3,600.00
Warehouse wages and expenses	3,100.00
Sales for year	36,000.00
Discount and allowance on sales	1,200.00
General expenses	2,800.00
Salaries	6,400.00
Rent of store and office	4,000.00
Inventories at end of year:	
Raw material	5,600.00
Goods in process	1,900.00
Finished goods	12,400.00

Fig. 11 shows the manufacturing statement made from the preceding summary of transactions. As will be observed, the cost of the manufactured output is $19,100, and this cost price may be used for figuring percentages if required. It is apparent that some of the charges belong to partly manufactured goods and are added thereto in stating the final inventory value. In

determining costs it is customary to add a part of the general overhead expenses as a manufacturing charge.

Sometimes the manufacturing department takes a profit on its output instead of handing the finished goods over to the trading department at the bare cost price. Thus, if the finished goods are handed over at an advance of 10 per cent. over the cost, the credit would be $21,010, instead of $19,100 as shown. The trading account in such a case should, of course, be charged

MANUFACTURING STATEMENT

Costs			*Output*	
Inventory, January 1, 1912:			Manufactured output	
Raw materials $6,000			for year transferred	
Goods in process 3,000		$ 9,000.00	to trading statement	$19,100.00
Purchases of material		5,800.00	(Taken at cost price)	
Freight and duty		1,100.00		
Factory expenses		3,100.00		
Rent of factory		4,000.00		
Wages of workmen		3,600.00		
Total cost		26,600.00		
Less inventory, December 31, 1912:				
Raw material	5,600			
Goods in process	1,900	7,500.00		
		$19,100.00		$19,100.00

FIG. 11

with the same amount; also, the manufacturing account would show a profit of $1,910, and the trading statement a profit of only $13,090. In either case, however, the net profit will be the same. The manufacturing profit plus the trading profit will amount to $15,000.

36. Trading Statement for a Manufacturer.—The trading statement for a trading concern, Figs. 8 and 9, must undergo some changes to serve the same purpose for a manufacturing industry. Fig. 12 is shown as a complement to the manufacturing statement. It differs slightly from the prece-

ding forms in respect to the first or inward costs, but the remaining items are unchanged. The gross profit in each case is $15,000, which in turn is carried to the profit-and-loss statement.

TRADING STATEMENT—(Third Form)

Debits		*Credits*	
Goods on hand, January 1, 1912	$10,000.00	Sales	$36,000.00
Manufacturing goods at cost, as per manufacturing statement	19,100.00	Less discounts	1,200.00
Warehouse wages and expenses	3,100.00	Net sales	34,800.00
Total cost	32,200.00		
Less inventory, December 31, 1912	12,400.00		
Cost of goods sold	19,800.00		
Gross profit, carried to profit-and-loss statement	15,000.00		
	$34,800.00		$34,800.00

FIG. 12

37. Profit-and-Loss Statement for a Manufacturer. The profit-and-loss statement illustrated in Fig. 10 will remain unchanged under the manufacturing concern, since it records

APPORTIONMENT OF PROFITS FOR A PARTNERSHIP

Interest on capital:			Net profit for year	$1,800.00
A. W. Shaler	$ 250		Balance unapportioned from last year	750.00
G. H. Henry	350	$ 600.00		
Profits divided:				
A. W. Shaler	800			
G. H. Henry	1000	1,800.00		
Balance, undivided		150.00		
		$2,550.00		$2,550.00

FIG. 13

only general expenditures and profits. For this reason it is not repeated here, but it must be borne in mind that it is needed

to complete the trio of exhibits for a manufacturing and trading establishment.

38. Apportionment of Profits.—The net profit is always apportioned according to agreement, and sometimes a part of it remains undivided to meet unforeseen losses if any should occur. The net profit is sometimes divided without

UNDIVIDED PROFITS FOR A CORPORATION

Dividend No. 7, 6 per cent.	$2,400.00	Balance, undivided	$ 750.00
Balance, undivided	150.00	Net profit for year	1,800.00
	$2,550.00		$2,550.00

FIG. 14

being carried to a third division, and again it may be brought below the ruling and apportioned. The illustrations shown in Figs. 13 and 14 indicate the plans for both partnership firms and corporations.

APPLICATION OF TRADING AND PROFIT-AND-LOSS STATEMENTS

39. After the preceding explanation of the manufacturing, trading, and profit-and-loss accounts and the manner of preparing statements, it is in order to make a more extended discussion of these statements and illustrate their application to a trading concern. It will be noted that the statements already shown are in almost the same form as the regular ledger accounts that they represent, showing debits and credits in parallel columns. This plan of arrangement is followed by many firms and corporations because it presents side by side the corresponding items representing earnings and expenses. Many accountants prefer a different arrangement; that is, they prefer to list the credits or earnings first and then follow these with the various operating charges and expenses. The difference is then shown as a net profit or a net loss. In the illustrations, the trading and the profit-and-loss accounts are shown separately, but leading accountants of today do not adhere to this

plan. In many cases it is difficult to determine what items should be placed in the trading account and what in the profit-and-loss; and sometimes it is necessary to prorate certain charges between the two in order to present true results. This necessitates additional work without even then being certain of correct results. It is therefore thought best to include them all in one comprehensive statement, as will be explained hereafter.

40. Form and Contents of Statements.—A profit-and-loss statement is compiled from the various ledger accounts once a year, or oftener, summarizing the earnings, the trading and administrative expenses, and the net profit or net loss for the fiscal period covered. However, the manner of exhibiting this information and the details to be shown are not of so much concern here as the results that are to be obtained. The statement should be made in such a way as to exhibit all the information that the proprietor wishes to know. It should be clear and simple. The arrangement of a profit-and-loss statement is governed largely by the intelligence of the person for whom it is made, and the individual tastes of the accountant. There is no definitely fixed form in general use, yet the forms that follow have the approval of leading American certified public accountants. The profit-and-loss statement is known also by the following names: Profit-and-loss account, loss-and-gain account, loss-and-gain statement, income statement, revenue statement, business statement, revenue account, income account, statement of operations (for manufacturing), statement of income and expenses, statement of earnings and expenses, statement of revenue and expenses, statement of income and profit and loss, income and profit-and-loss statement, trading and profit-and-loss statement, and manufacturing and profit-and-loss statement.

41. It is apparent that some of the preceding titles are inappropriate for general use, yet each may be applicable to specific cases. For a professional man, the term income and expenditure would seem more appropriate than profit and loss.

Whatever term is used should state also the fiscal period covered in the statement; as, profit-and-loss statement for the Fiscal Year Ended December 31, 1912. It is sometimes made very elaborate and replete with details and subdivisions; and again it may contain general amounts and totals while analyses of details are set forth in supporting schedules or statements. It is unwise, however, to crowd the statement with too many details, as they have a tendency to make it unreadable. Whatever plan of arrangement is adopted should be maintained without variation in order that like results may be compared from year to year. This, of course, cannot easily be done if frequent changes are made in the bookkeeping system.

It is well not to lose sight of the fact that the profit-and-loss statement is made up from data supplied by the book accounts, and that so long as the details are obtainable they can be properly adjusted, segregated, and arranged by the accountant in his statement, even if the books are unscientifically kept. In that case, the books may be closed in the usual way and then the information carefully summarized for the statements. While this may be true, it is nevertheless desirable to have the ledger accounts arranged to harmonize with the order followed in the preparation of statements.

42. The profit-and-loss statement of a trading concern, the kind now under consideration, is frequently divided into two or three parts, but it is usually difficult to determine which items should go into one section and which into the other. For that reason many accountants prepare statements without any serious attempt at subdivision. The divisions most common are as follows: Trading statement, profit-and-loss statement, and apportionment of profits. The first division contains an account of all merchandise purchased and sold, with the supplementary charges or credits directly applicable thereto. It is an account of trading and sometimes includes all the selling expenses concerned in handling and disposing thereof. Gross sales less the cost of goods disposed of and the various selling expenses give the gross trading profit. The second division

includes this gross trading profit less the various general and administrative expenses, the resulting balance being the net profit or net loss. The two divisions might be likened to the warehouse where the goods are handled, and the office where the administrative expenses are incurred. The third division, if used, simply shows the disposition of profits earned. In a corporation it is known as the undivided-profits account.

43. Illustration of Forms of Profit-and-Loss Statement.—In order to illustrate properly the different forms of profit-and-loss statement and its subdivisions, use will be made of the following summary of transactions for 1912:

Merchandise on hand, January 1, 1912	$20,000.00
Merchandise on hand, December 31, 1912	38,420.00
Purchases for year	81,680.00
Rebates and allowances on purchases	3,200.00
Rebates and allowances on sales	2,890.00
Sales for year	98,990.00
Sales returned	360.00
Freight inbound	1,100.00
Salesmen's commissions and salaries	2,250.00
Salesmen's expenses	940.00
Warehouse labor and expenses	3,150.00
Delivery expenses	1,310.00
Advertising	750.00
General expenses	1,040.00
Office expenses	220.00
Salaries of office employes	1,900.00
Salary of manager	1,500.00
Discount on sales	170.00
Discount on purchases	130.00
Rent of store	1,200.00
Rent of office	240.00
Insurance premiums	60.00
Interest and discount, debit	90.00
Depreciation of delivery equipment	210.00
Depreciation of furniture and fixtures	60.00

44. On referring to the forms shown in Figs. 15, 16 and 17, it will be noticed that the trading account of Manning Brothers & Simpson, Fig 15, is marked Exhibit A, and that the profit-and-loss statement, Fig. 16, is marked Exhibit B, and the statement of earnings and expenses, Fig. 17, Exhibit C. The balance sheet when prepared should be referred to as Exhibit D. The term *exhibit* has reference to the statement or the form, and is used simply as an index or a distinguishing mark for convenient reference. It is placed either at the top or the bottom

Exhibit A

MANNING BROTHERS & SIMPSON
Trading Statement—Year Ended December 31, 1912

Debits			*Credits*		
Inventory, January 1, 1912		$20,000.00	Sales		$98,990.00
Purchases	81,680.00		Less:		
Less:			Rebates and allowances	2,890.00	
Rebates and allowances	3,200.00	78,480.00	Returns	360.00	3,250.00
Freight inbound		1,100.00	Net sales		95,740.00
Total charges		99,580.00			
Deduct:					
Inventory, December 31, 1912		38,420.00			
Cost of goods sold		61,160.00			
Gross profit		34,580.00			
		$95,740.00			$95,740.00

FIG. 15

NOTE.—Sometimes double pages are used for preparing a statement of this kind, especially where a greater analysis of details is desired.

of the page, in some conspicuous location. If the sheets are bound at the left-hand edge, then the paging of each sheet is usually shown at the top, in which case the index number of the exhibit should also be at the top of the page. When the sheets are bound at the top, both the pages and the exhibit numbers should be placed at the bottom. Sometimes supplementary statements giving analyses of details are required, and they are referred to as statements or schedules. These underlying schedules are subordinate to the main exhibits and

MANNING BROTHERS & SIMPSON

Profit and Loss Statement—Year Ended December 31, 1912

Debits			*Credits*	
Selling expenses:			Gross profit from trading account	$34,580.00
Salesmen's commissions and salaries	$2,250.00		Discount on purchases	130.00
Salesmen's expenses	940.00			
Warehouse labor and expenses	3,150.00			
Delivery expenses	1,310.00			
Advertising	750.00			
Rent of store	1,200.00			
Total selling expenses		$ 9,600.00		
General and administrative expenses:				
General expenses	$1,040.00			
Office expenses	220.00			
Salary of manager	1,500.00			
Salaries of office employes	1,900.00			
Rent of office	240.00			
Discount on sales	170.00			
Interest and discount	90.00			
Insurance premiums	60.00			
Delivery equipment, depreciation	210.00			
Furniture and fixtures, depreciation	60.00			
Total general and administrative expenses		5,490.00		
Total charges		15,090.00		
Net profit:				
A. W. Manning, one-third	$6,540.00			
George Manning, one-third	6,540.00			
Chas. Simpson, one-third	6,540.00	19,620.00		
		$34,710.00		$34,710.00

FIG. 16

Exhibit C

MANNING BROTHERS & SIMPSON

Statement of Earnings and Expenses—Year Ended December 31, 1912

Earnings			
Gross sales for year		$98,990.00	
Less rebates, returns, and allowances		3,250.00	$95,740.00
Deduct cost of operations:			
Inventory, January 1, 1912		20,000.00	
Purchases for year	$81,680.00		
Less rebates and allowances	3,200.00	78,480.00	
Add freight inbound		1,100.00	
Total charges		99,580.00	
Less inventory, December 31, 1912		38,420.00	
Cost of goods sold			61,160.00
Gross trading profit			34,580.00
Discount on purchases			130.00
Total earnings			34,710.00
Expenses			
Selling expenses:			
Salesmen's commissions and salaries	$2,250.00		
Salesmen's expenses	940.00		
Warehouse labor and expenses	3,150.00		
Delivery expenses	1,310.00		
Advertising	750.00		
Rent of store	1,200.00		
Total		9,600.00	
General and administrative expenses:			
General expenses	1,040.00		
Office expenses	220.00		
Salary of manager	1,500.00		
Salaries of employes	1,900.00		
Rent of office	240.00		
Discount on sales	170.00		
Interest and discount	90.00		
Insurance premiums	60.00		
Delivery equipment, depreciation	210.00		
Furniture and fixtures, depreciation	60.00		
Total		5,490.00	
Total selling and general expenses			15,090.00
Net profit for year			$19,620.00
Profits apportioned to:			
A. W. Manning, one-third	$6,540.00		
George Manning, one-third	6,540.00		
Chas. Simpson, one-third	6,540.00		
Total		$19,620.00	

FIG. 17

are frequently referred to as supporting statements or supporting schedules. This may include inventories, personal accounts, interest details, reserves, etc. If an amount in the main exhibit requires an elucidation of details, this is usually contained on a separate sheet and known as Exhibit A, Statement 1, or as Exhibit B, Statement 5, as the case may be. These schedules may follow the exhibits to which they belong, or else be listed in order after all the main exhibits have been stated. It is the custom of accountants and corporation officials to accompany the annual business statements with a report or a letter, in which they frequently draw attention to items contained in the exhibits and schedules. There are many points connected with the work of an accountant that should be carefully observed. By observation, research, and study it is possible to become thoroughly posted on the methods used by the leading corporations and accountants.

It is advisable to have the heading of every statement, exhibit, schedule, or form so clearly shown that its purpose cannot be misunderstood. For example, the profit-and-loss statement should be headed as shown in Fig. 16, giving first the name of the firm or the company and then the name of the statement, followed by an indication of the fiscal period covered.

45. Profits Defined.—The **net profit,** or **net income,** of a business is the surplus earnings from business activities remaining after providing for all costs, expenses, depreciation of properties, and reserves for accrued or possible losses. The **gross profit** is the excess of sales over the cost of goods sold, the cost in this case representing the entire cost of placing the goods on the shelves. In a large undertaking it is a difficult matter at times to state accurately the exact amount of profits for a given period, owing to the fact that the company frequently has items of profit that have not been derived from the usual business activities. Profits of an extraordinary nature should not be included as regular business results, as interest and dividends from investments, outside earnings, premium on the sale of bonds or stock, profit on the sale of buildings, etc. This applies also to expenses that do not usually belong to the

business. It has particular force in connection with corporations that derive income from investments or other outside sources. All profits derived from sources other than business operations are usually listed separately; that is, the net business profit is first determined before the other income is added.

46. Profits derived from the sale of capital assets or from the increase in value thereof should not be considered an operating profit. Such profit, or increment, is obviously a part of capital and should be credited to surplus. Property should not be increased in value, however, unless it is likely to be of a permanent nature. Sometimes profits are inflated by increasing the inventory valuations of merchandise above the cost price. This should not be done even if the market value has increased, because it may go down again before the goods are disposed of. A good plan is to take profits only when they are earned, and never to anticipate profits on sales that are not to be delivered until some future date. There may be exceptions to this rule, but in most cases the rule is a safe one to follow. Fixed properties should be depreciated over the estimated life thereof. Merchandise should be taken at cost, or at the present market price, whichever is the lower.

An extraordinary loss, on the other hand, should not be charged against current earnings. This may include a fire loss, a shrinkage in the value of real estate, loss on investments by reason of market fluctuations, loss on the sale of some fixed or capital asset, etc. Such a loss should be charged against surplus earnings, because it does not rightfully belong to the current operating costs of the business. In some cases, as in extraordinary expenses or heavy outlay for advertising, it is good practice to spread a charge of this kind over a term of 3 or 4 years.

47. Income and Profit-and-Loss Statement for a Manufacturing Company.—In Fig. 18 is shown an interesting statement of the earnings and operating expenses of a large manufacturing company and its subsidiary companies in the United States, as prepared by a leading firm of certified public accountants. It will be well to note its simplicity and

CONSOLIDATED STATEMENT OF INCOME AND PROFIT AND LOSS FOR THE YEAR ENDED MARCH 31, 1912

Gross Earnings:		
Sales billed		$34,196,445.68
Cost of Sales:		
Factory costs, including all expenditures for patterns, dies, new small tools, and other betterments and extensions; also inventory adjustments and all selling, administration, general, and development expenses		30,604,849.88
Net manufacturing profit		3,591.595.80
Other Income:		
Interest and discount	$ 330,792.33	
Dividends and interest on sundry stocks and bonds owned	720,681.02	
Miscellaneous—royalties, etc.	108,969.42	1,160,442.77
Gross income		4,752,038.57
Deductions From Income:		
Interest on bonds and debentures	1,116,307.63	
Interest on collateral notes	376,000.00	
Interest on long-term notes and mortgages	106,720.20	
Depreciations charged against income	504,942.04	
Proportion of expenses incidental to bond and note issues	90,000.00	
Miscellaneous	113,975.26	2,307,945.13
Net income—surplus for the year		2,444,093.44
Profit-and-Loss Credits:		
Profit and loss—surplus, March 31, 1911	5,964,224.90	
Profit on bond purchases	8,722.23	
Adjustment of appraised values of property and plant accounts	117,100.11	
Miscellaneous	806.12	6,090,853.36
Gross surplus		8,534,946.80
Profit-and-Loss Charges:		
Dividends on preferred capital stock	279,909.00	
Dividends on common capital stock	352,117.50	
Depreciation of investments	1,050,285.31	
Miscellaneous	203,670.70	1,885,982.51
Surplus, March 31, 1912, per balance sheet		$ 6,648,964.29

FIG. 18

Income Account

Show on this and the following pages the various items of the income account of the respondent for the year ended December 31, 191__

Operating Income:
Electric Operations from to

1	Gross operating revenues (p. 54)
2	Operating expenses (p. 56)
3	Taxes (p. 59)
4	Uncollectible bills
5	Income from electric operations
6	Gas operations from
7	Gross operating revenues (p. 55)
8	Operating expenses (p. 57)
9	Taxes (p. 59)
10	Uncollectible bills
11	Income from gas operations
12	Outside operations (p. 58)
13	Gross revenues from outside operations
14	Operating expenses
15	Taxes (p. 59)
16	Uncollectible bills
17	Income from outside operations
18	Total operating income
19	Non-operating income: Electric
20	Rents accrued from lease of electric plant and equipment (p. 60)
21	Rents accrued from lease of gas plant and equipment (p. 60)
22	Other rents—credits (p. 60)
23	Interest, accrued on bonds owned or controlled (pp. 24 and 61)
24	Interest, other securities, loans and accounts (p. 61)
25	Dividends on stocks owned or controlled (pp. 24 and 61)
26	Separately operated properties—profit (p. 60)
27	Miscellaneous income (p. 61)
28	Total non-operating income
29	Gross income applicable to corporate and leased properties
30	Deductions from gross income:
31	Interest accrued on funded debt and debenture stocks (p. 26)
32	Other interest deductions
33	Rents accrued for lease of other electric plant or equipment (p. 62)
34	Rents accrued for lease of other gas plant or equipment (p. 62)
35	Other rents accrued—debits (p. 62)
36	Separately operated properties—loss (p. 60)
37	Sinking funds chargeable to income (p. 62)
38	Guaranties of periodic payments (p. 63)
39	Other contractual deductions (p. 63)
40	Amortization chargeable to income
41	Total deductions from gross income
42	Net corporate income transferred to (debit or credit) of corporate surplus or deficit

Fig. 19

Corporate Surplus or Deficit Account

Show hereunder the debits and credits to the corporate surplus or deficit account of the respondent during the year ended December 31, 191___, giving explanations in foot-notes.

Line No.	Debits (a)	Credits (b)
1	To balance, December 31, 191___	By balance, December 31, 191___
2	Balance for half-year transferred from income account	Balance for half-year transferred from income account
3	Dividends declared	Bad debts collected
4	(a) On preferred stock:	Other additions to surplus (specify)
5	___% on $___payable___	
6	___% on $___payable___	
7	(b) on_____stock:	
8	___% on $___payable___	
9	___% on $___payable___	
10	(c) On other securities:	
11	___% on $___payable___	
12	___% on $___payable___	
13	Expenses elsewhere unprovided for	
14	Amortization elsewhere unprovided for	
15	Appropriations to reserves	
16	Gifts to controlled corporations	
17	Other appropriations	
18	Bad debts written off	
19	Other Deductions From Surplus: (Specify)	
20		
21		
22		
23		
24	To balance, December 31,	By balance, December
25	191___	31, 191___
26	To balance carried forward to balance sheet of December 31, 191___	By balance carried forward to balance sheet of December 31, 191___

Fig. 20

the manner of making additions and deductions. This form, while condensed, is now used extensively by large corporations and by leading accountants. The items therein are frequently analyzed in supporting schedules.

48. Income Account of a Public-Service Corporation. The income account and the surplus and deficit account shown in Figs. 19 and 20, respectively, are from the annual report of the Public Service Commission of the State of New York. The report contains 76 pages. The figures shown in the statements refer to pages of the report for full details. Three columns are used in the income account for showing deductions, additions, and balances.

49. Income and Profit-and-Loss Statements for Railroads.—The following are the forms of income and profit-and-loss statements required by the Interstate Commerce Commission. Of course, the actual statements are more elaborate than this brief outline would indicate, and several additional pages or forms are required fully to elucidate the items shown therein. The annual report required of railroad companies is contained in a book of 128 pages. As will be observed, the balance of income account is transferred to the credit of profit and loss, and the balance or net profit is then carried to the general balance sheet. The accounts are indexed as I. 1, I. 2, etc. for reference to the separate accounts under the head of Income. A like plan is followed in referring to accounts belonging to profit and loss. They are referred to as PL. 1, PL. 2, etc.

INCOME STATEMENT FOR RAILWAY COMPANY

List of Accounts

1. Railway Operating Income:
   - I. 1. Rail operations—Revenues.....
   - I. 2. Rail operations—Expenses.....
   - Net revenue (or deficit)—Rail operations
   - I. 3. Auxiliary (or outside) operations—Revenues.....
   - I. 4. Auxiliary (or outside) operations—Expenses.....
   - Net revenue (or deficit) auxiliary operations.

Net railway operating revenue (or deficit).
I. 5. Railway tax accruals.....
Railway operating income (or loss).

2. Other Income:
I. 6. Income from lease of road.....
I. 7. Hire of equipment—Credit balance.....
I. 8. Joint facility rent income.....
I. 9. Miscellaneous rent income.....
I. 10. Net profit from miscellaneous physical property.....
I. 11. Separately operated properties—Profit.....
I. 12. Dividend income.....
I. 13. Income from funded securities.....
I. 14. Income from unfunded securities and accounts.....
I. 15. Income from sinking and other reserve funds.....
I. 16. Release of premiums on funded debt.....
I. 17. Contributions from other companies.....
I. 18. Miscellaneous income.....
Total other income.....
Gross income (or loss).....

3. Deductions from Gross Income:
I. 19. Deductions for lease of other roads.....
I. 20. Hire of equipment—Debit balance.....
I. 21. Joint facility rent deductions.....
I. 22. Miscellaneous rent deductions.....
I. 23. Miscellaneous tax accruals.....
I. 24. Net loss on miscellaneous physical property.....
I. 25. Separately operated properties—Loss.....
I. 26. Interest deductions for funded debt.....
I. 27. Interest deductions for unfunded debt.....
I. 28. Amortization of discount on funded debt.....
I. 29. Transfer of income to other companies.....
I. 30. Miscellaneous deductions.....
Total deductions.....
Net income (or loss).....

4. Disposition of Net Income:
I. 31. Appropriations of income to sinking and other reserve funds.....
I. 32. Dividend appropriations of income.....
I. 33. Appropriations of income for additions and betterments
I. 34. Appropriations of income for new lines and extensions..
I. 35. Stock discount extinguished through income.....
I. 36. Miscellaneous appropriations of income.....
Income balance transferred to credit (or debit) of profit and loss.....

PROFIT-AND-LOSS STATEMENT FOR RAILWAY COMPANIES

List of Accounts

1. Credits

Balance (at beginning of fiscal period)
PL. 1. Credit balance transferred from income account.....
PL. 2. Profit on road and equipment sold.....
PL. 3. Delayed income credits.....
PL. 4. Miscellaneous credits.....
Balance debit (at end of fiscal period) carried to general balance sheet.....

2. Debits

Balance (at beginning of fiscal period)
PL. 5. Debit balance transferred from income account.....
PL. 6. Appropriations of surplus to sinking and other reserve funds.....
PL. 7. Dividend appropriations of surplus.....
PL. 8. Appropriations of surplus for additions and betterments.....
PL. 9. Appropriations of surplus for new lines and extensions
PL. 10. Stock discount extinguished through surplus.....
PL. 11. Debt discount extinguished through surplus.....
PL. 12. Miscellaneous appropriations of surplus.....
PL. 13. Loss on retired road and equipment.....
PL. 14. Delayed income debits.....
PL. 15. Miscellaneous debits.....
Balance credit (at end of fiscal period) carried to general balance sheet.....

CLOSING THE BOOKS

50. Once a year, or oftener, it is customary to *close the books*. This is also known as *closing the ledger* and as *closing the accounts*. It is usually done at the end of the fiscal year, which may or may not be at the end of the calendar year. It is preferable to have the year end at a time when business is slack or when most convenient to take an inventory. In the coal business, for instance, the closing could be done most advantageously at a time when the coal supply is low, due to the fact that a physical inventory can be taken with less work than when a full supply of coal is on hand. At the time of closing, it is customary to prepare a profit-and-loss statement showing the business operations for the year, as well as a

balance sheet or a statement of condition showing the assets and liabilities of the concern and its net worth. This is all done, of course, for the benefit of the proprietors of the concern, whether it be owned by an individual, by partners, or by a corporation. Sometimes statements are made out monthly, quarterly, or half yearly for the purpose of supplying information for which the proprietor cannot conveniently wait until the end of the year. This does not mean that the ledger is to be closed, or any of the accounts affected, but simply that details are compiled from the books and presented in condensed form. Indeed, where the inventories can be determined from the books, without making a detailed valuation, a complete monthly profit-and-loss statement can be made with very little extra work. This depends of course on the bookkeeping system in use, and very largely on the ability and resourcefulness of the person in charge. When closing, it is customary to close all nominal accounts, that is, all accounts that show profits and losses; but before doing so it is necessary to determine all inventory valuations, accrued charges, allowances, etc. It does not seem necessary to close the accounts that show assets or liabilities, except at such times as they are balanced by settlement or adjustment, or when forwarding them to another page or to another ledger. If adjustments are made in an account, it is advisable at that time to rule up the account and then bring down the new balance as a beginning for future transactions. Some accountants advocate closing all accounts once a year, but this adds work without much to be gained thereby. When all accounts showing profits and losses are closed into the profit-and-loss account, and the net profit, in turn is closed into the proprietor's account, or into an undivided-profits account, the ledger is said to be closed. When this is completed, the ledger will again be in balance, but will contain open accounts only for assets, liabilities, capital, and profits. The closing feature is a process of elimination in order to determine the gain or loss, which, in turn, is either credited or debited to the proprietor's account.

51. When closing the ledger, it is necessary to transfer the gains and losses to the profit-and-loss account, and sometimes

it is necessary to transfer balances or totals of accounts from one page to another. The transfers may be made on the face of the ledger without any supporting journal entries or explanations, but this is not good practice. Every ledger entry should be supported by a full explanation. Consequently, closing entries and transfer entries should always be made in the

JOURNAL ENTRIES TO CLOSE THE LEDGER

September 30, 191—

(1)	Merchandise		$2,400.00	
	To purchases			$2,400.00
	To close purchases account.			
(2)	Sales		1,200.00	
	To merchandise			1,200.00
	To close sales account.			
(3)	Merchandise		650.00	
	To profit and loss			650.00
	Profit of merchandise transferred to profit and loss.			
(4)	Profit and loss		410.00	
	To Expense			410.00
	To close the following accounts per expense ledger:			
	Rent	$ 50.00		
	Office expenses	60.00		
	Advertising	60.00		
	General expenses	40.00		
	Salaries	200.00		

NOTE.—This should be posted to the expense ledger also, to close the above accounts therein, with a corresponding debit to general-ledger account.

(5)	Profit and loss	240.00	
	To capital		240.00
	To close net profit into the proprietor's account		

FIG. 21

journal and posted from it to the respective ledger accounts. In this way, every transfer or adjustment entry can be accompanied by details giving reasons for its existence. In some cases the explanation may be very brief. It is advisable, however, to make entries and explanations so clearly that they will be intelligible to others who desire to make reference thereto. Fig. 21 will serve to show such closing entries.

ANALYSIS OF ACCOUNTS
(PART 3)

THE BALANCE SHEET AND ITS CONSTRUCTION

DEFINITIONS OF TERMS

1. As has already been stated, there are three divisions, or classes, of accounts—the capital accounts; the real, or balance-sheet, accounts; and the nominal, or profit-and-loss, accounts. As the various accounts affecting profit and loss and the manner of preparing statements from them have been explained, the class comprising the assets and liabilities will now be taken up. These are usually set forth in the annual balance sheet or statement of condition, which is made up at the end of each fiscal period to exhibit a concern's present net worth or financial standing. This statement is made up after the net profit has been determined, and usually after the ledger has been closed. It is often found advantageous, however, to complete the adjustments and statements on paper before closing the accounts. In this way changes can be made, if necessary, without having to alter the ledger accounts. The net profit becomes the keystone of the balance sheet and is necessary to prove the accuracy of both statements. Before proceeding to the preparation of statements, however, the various kinds of assets and liabilities will be taken up in order and defined.

2. The **assets,** or **resources,** of a business comprise anything of value belonging to it, such as real estate, machinery,

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furniture, merchandise, prepaid charges; it also comprises obligations of any kind owing to it, as notes and accounts receivable, mortgages receivable, etc. These are divided into *fixed* and *current*, or *floating*, *assets*.

3. The **liabilities** of a business comprise all obligations owing by it to others, as notes and accounts payable, mortgages, bonds, accrued charges, etc. These are divided into *fixed*, *current*, or *floating*, and *contingent liabilities*.

4. The capital account is credited with and indicates the amount of capital invested. It is not necessarily a liability, but simply represents the amount of assets put into the business by the proprietors or the stockholders. In a partnership, it is represented by the partners' capital accounts, and in a corporation by the capital stock account. For the purpose of classification, it might be called a liability because it represents, in a healthy concern, the amount owing to the proprietors; yet this is not strictly correct, because in the case of liquidation, the outside creditors must be paid off first regardless of proprietors' claims. If there is anything left, it goes to the proprietors; otherwise, they get nothing. Indeed, if the assets are not sufficient to satisfy the creditors, the private estate of each partner may be drawn on for that purpose. In the case of a corporation, the stockholders are not, of course, liable for more than their stock holdings. The net worth of a concern is usually determined at the end of each fiscal period after the net profit has been credited to the proprietor's account. The profit thus credited may then be withdrawn from the business or left therein as a further investment. The original investment plus the net profit, or minus the net loss, is the proprietor's **capital** or **net worth.** The capital of a corporation is represented by its capital stock plus any surplus earnings remaining undistributed. In any case, the capital of a concern is composed of the excess of its assets over its liabilities to the outsiders. This is known also as *net worth*, *present worth*, and *financial condition*. It should be kept in mind that capital is always an asset, or made up of many assets, while the capital stock or capital

account is a credit representing the amount of capital invested in the business.

5. Fixed assets comprise the properties, premises, or resources of a permanent nature, not intended for sale or exchange, with which the business is carried on. Things that can be used over and over again for the same purpose, as land, buildings, machinery, fixtures, implements, tools, delivery equipment, patterns, and drawings, are also termed *capital assets*, because they compose a large part of the capital or investment in the business. They are known as fixed assets in contradistinction to the current, or floating, assets, which are mentioned later. These assets are usually maintained in the accounts at the cost price in order to show at any time the original value of fixed properties on hand. At the end of each fiscal period a specific per cent. thereof is usually set aside out of profits as a reserve to provide for depreciation of the properties. It must be kept in mind, however, that from time to time additional maintenance charges are necessary for upkeep, repairs, and improvements. These should invariably be included in the running expenses of the business, as they do not as a rule add to the value of the property. Land does not depreciate, ordinarily; therefore, the customary charges for maintenance and depreciation are not necessary. In case the land declines in value because of unfavorable surroundings, the book figures should be written down to a safe valuation and such reduction charged against surplus. As it is not an operating expense, and is the result of conditions over which the business may not have control, it is obviously not a charge against current profits.

6. Current assets include all circulating or changing assets in which the firm is dealing or with which it is possessed. The term comprises cash or those assets which can be readily converted into cash, as bank deposits, merchandise, raw material, accounts and notes receivable, rents receivable, investments, etc. These are frequently referred to as *quick*, *floating*, or *liquid assets*.

7. Investments include real estate, mortgages, bonds and stocks, and any other properties that may have been purchased as an investment. When preparing the balance sheet, such securities as can be easily realized on may be included among the current assets, but if there are many it is preferable to group them under investments. In some cases investment in securities is made for the purpose of controlling the acts of the issuing company. In such cases it would obviously be wrong to classify them with the current assets, because they are held more or less permanently and could not be disposed of without affecting the operating results of the business.

8. Speculative assets comprise such assets as are of a speculative nature and those purchased by the company for the purpose of speculation. They may include stocks, bonds, notes, property, real estate, and so forth.

9. Wasting assets include assets that are being gradually depleted or used, as wells, mines, quarries, clay and sand pits, and wooded forests. The practice is to provide for a gradual diminution or extinguishment of such properties over the period for which they are expected to exist. In the case of a mine, if the engineers estimate that it will be depleted in 50 years, then 2 per cent. of the value of the mine should be written off each year. At this rate, by the end of 50 years there will have been enough reserved to offset the original cost of the depleted mine. Outlays for additions and construction should also be gradually spread over the remaining estimated life of the mine.

10. Fictitious assets are intangible assets whose value is somewhat fictitious or undetermined, as good-will, franchises, patents, trade marks, copyrights, incorporation expenses, and bonuses. Sometimes they are called *passive assets*. With some of these assets, it is the practice to spread them over a term of 3 or 4 years instead of charging them all to the running expenses of the year in which they were incurred; this applies particularly to such capitalized charges as incorporation expenses, special advertising, and extraordinary expenditures. Licenses, too, might be included in this list.

11. Contingent assets are assets whose genuineness or ultimate value depends on some contingency. In other words, they are assets in anticipation, and may or may not be realized, as profits anticipated, disputed claims, judgments, items in suspense, doubtful debts, contracts to be filled, etc. These should not be entered on the books or the balance sheet as genuine assets because their ultimate value is so much in doubt. The preferable way is to make reference to them briefly in a foot-note to the balance sheet.

12. Fixed liabilities include bonds and debentures, mortgages, long-time loans, and purchase-money obligations. As they are not to be liquidated for a definite number of years, it is customary to refer to them as *fixed*. They are also termed *capital liabilities*. The capital stock of a corporation is sometimes referred to as a liability, but this is obviously a misnomer, because the stockholders are not creditors of the corporation and their claims as owners cannot be satisfied until all other creditors have been paid.

13. Current liabilities include the usual business obligations that are incurred in the daily conduct of business, as notes and accounts payable, loans, and short-time obligations. They may include also the accrued interest and other obligations payable, as taxes, wages, water rates, dividends, unpaid coupons, rent, damage claims, and other current items.

14. Contingent liabilities include claims or obligations for which the company is liable and which may or may not have to be paid. They comprise such items as notes of customers under discount at the bank on which the company is liable as indorser, notes transferred, as drawers of time drafts, disputed claims, judgments, accommodation notes, indorsements, guarantees, uncompleted contracts, or claims.

15. Reserve accounts are not liabilities, but are negatives to accounts that appear among the assets. For example, the reserve for depreciation of real estate is a negative to the real-estate account, and may either be shown on the liability side of the balance sheet or else be deducted from the original value

on the assets side. This applies also to reserves for bad debts and any other reserves belonging to properties.

16. The **balance sheet** is a statement of the assets, liabilities, and net worth of a business concern, at any particular time, arranged in such a way as to show clearly its financial condition. It is prepared at the end of each fiscal year, and sometimes monthly, for the purpose of exhibiting to the management the correct status of the concern at that time. The information thus conveyed enables the proprietor to administer affairs wisely and judiciously.

The balance sheet is so called from the old balance account, which was formerly used as a ledger account. All the accounts remaining open after the profit-and-loss accounts were closed were obviously either assets or liabilities and therefore were closed into the balance account. This balance account then showed assets on the debit side and liabilities on the credit. The balance, of course, constituted the proprietor's net worth. This, in brief, is the origin of the balance sheet, which was afterward copied on a sheet with more or less additional information for the benefit of the proprietor.

17. The **statement of assets and liabilities** is a statement of the assets, liabilities, and net worth of a concern at any particular time. The balance sheet is a statement of assets and liabilities, but the latter is not necessarily a balance sheet, because it may not contain the balancing feature that comprises an analysis of the proprietor's investment and his net profit. A balance sheet is compiled from a set of double-entry books and exhibits the financial condition of the business, but a statement of assets and liabilities may contain items taken partly from a set of single-entry books and gleaned partly from various other sources. It is frequently necessary to compile the assets and liabilities from various sources other than from the ledger accounts, and this is especially true when single-entry books have been used, because they contain only a part of the assets and liabilities. It is obvious that the term *balance sheet* in this case would be a misnomer; yet the terms are used synonymously without regard to the sources of information.

ARRANGEMENT AND FORMS OF BALANCE SHEET

18. The balance sheet is usually arranged in the form of a ledger account, with the assets on the left-hand side and the liabilities on the right. The difference between the assets and the liabilities represents the net worth of the proprietor, and is ordinarily shown among the liabilities, as is illustrated later. A net insolvency exists when the liabilities exceed the assets. The English form of balance sheet is used extensively in England and to some extent in Canada; it places the liabilities on the left-hand side and the assets on the right. This form is used to some extent in the United States, especially by English accountants, but general usage in most cases prescribes the regular form illustrated later. In any case, when the assets, liabilities, and net worth are recorded on their respective sides, the statement will *balance*—it becomes a balance sheet. The proper form of balance sheet can be better understood by studying illustrations of them; therefore, it is advisable to study and copy carefully the forms here illustrated, because each one has its distinctive features.

19. As has been stated, the balance sheet shows a concern's financial condition as on a particular date. In addition to showing the present net worth of the proprietor, the balance sheet has an additional mission, namely, that of exhibiting as clearly as possible the various kinds of assets and liabilities in proper sequence. In order to exhibit this information most advantageously, accountants usually follow their own inclinations, and they are frequently governed by the tastes or ability of the clients to grasp the information set forth. It is advisable in any case to have the statements arranged in a simple, readable shape, so that any one may be able to comprehend the various details set forth.

20. The balance sheet is known also as the statement of assets and liabilities, the statement of resources and liabilities, the statement of condition, the statement of affairs, and the financial statement. No matter what name is given, it is obvious that the exhibit should be correlated and divided in

such a way as to present as much information as possible without unnecessary explanations. Whether or not it shall be condensed or elaborate depends on conditions, and to some extent on the intelligence of the person who is expected to read it. The statements made up for the immediate information of the proprietor or directors are usually elaborate in detail and accompanied by supplementary schedules; but the balance sheets made up for publication or to be supplied to the stockholders, are generally more condensed. There is a double

BALANCE SHEET

Of James G. Keating, December 31, 1912

Assets		*Liabilities*	
Real estate	$ 22,000.00	Capital invested	$ 50,000.00
Machinery and tools	11,000.00	Mortgage payable	10,000.00
Furniture and equipment	6,000.00	Special loan	15,000.00
Delivery equipment	3,200.00	Accounts payable	19,800.00
Raw material	11,500.00	Notes payable	16,370.00
Goods in process	4,800.00	Wages due	2,250.00
Merchandise	18,400.00	Reserve for depreciation	4,380.00
Accounts receivable	23,100.00	Reserve for bad debts	3,750.00
Notes receivable	14,400.00	Net profit for year	13,620.00
Investments	12,000.00		
Prepaid and accrued interest	640.00		
Prepaid taxes and insurance	190.00		
Cash	7,940.00		
	$135,170.00		$135,170.00

FIG. 1

reason for this; first, because it is not necessary to print all the details or to spend money in doing so, and second, it may not be prudent to publish information that should be known only to the directors. Information given out in this way might be used by competing institutions to the company's disadvantage. The form of balance sheet in most general use among the larger corporations places the assets on the left-hand page and the liabilities and net worth on the right, and yet many first-class accountants prefer the form that lists all assets first and

Balance Sheet of James G. Keating

As on December 31, 1912

Assets			Liabilities and Net Worth		
Fixed Assets:			Fixed Liabilities:		
Real estate	$22,000		Mortgage payable	$10,000	
Machinery and tools	11,000		Special loan	15,000	$ 25,000.00
Furniture and equipment	6,000		Current Liabilities:		
Delivery equipment	3,200	$ 42,200.00	Accounts payable	19,800	
Inventories:			Notes payable	16,370	
Raw material	11,500		Wages due	2,250	38,420.00
Goods in process	4,800		Reserve Accounts:		
Merchandise	18,400	34,700.00	Reserve for depreciation	4,380	
Prepaid and Accrued Charges:			Reserve for bad debts	3,750	8,130.00
Prepaid and accrued interest	640		Total Liabilities		71,550.00
Prepaid taxes and insurance	190	830.00	Excess of Assets Made Up By:		
Current Assets:			Capital investment	50,000	
Accounts receivable	23,100		Net profit for year	13,620	
Notes receivable	14,400				
Investments	12,000				
Cash	7,940	57,440.00	Present net worth		63,620.00
		$135,170.00			$135,170.00

Fig. 2

then follows with the liabilities. This is undoubtedly a desirable form and is to be commended for small concerns because all the information can be easily shown on a single page.

21. Forms of Balance Sheets.—In Figs. 1 to 4, inclusive, are shown balance sheets that will serve to illustrate the different forms in general use.

22. In the form shown in Fig. 1, the assets and liabilities are listed in parallel columns, without any attempt at grouping. Although this plan may be suitable in some cases, especially in published statements, it does not convey the information usually desired by the proprietors or stockholders. The invested capital and profits are really not liabilities and therefore should be listed separately, as is shown in the other forms illustrated. It will be advisable to study the contents of this statement and then compare the details of it with the forms that follow. In this way, it will be seen that there are several ways of preparing financial statements and in setting forth their contents.

23. The items in the form illustrated in Fig. 2 are carefully grouped in order to exhibit separately the various divisions of assets and liabilities. By this means the proprietor can see at a glance the total of his fixed and current assets or liabilities. Since the total assets and total liabilities are given, it is an easy matter to determine the proprietor's net worth or net insolvency. In this case, the net worth consists of the original investment plus the year's net profit, making a total of $63,620. Note that the reserve accounts, aggregating $8,130, are placed among the liabilities. By right, this inflates the liabilities to that extent, while the assets, on the other hand, are overvalued in a like amount; the difference between the assets and liabilities, however, shows the true net worth. Many accountants deduct the reserves from the assets to which they belong when preparing statements, but this is not necessarily done in the book accounts. In this way, the assets exhibit their true net value, while the liabilities remain unencumbered by the addition of reserve accounts. These are not liabilities, and yet they are

STATEMENT OF CONDITION OF JAMES G. KEATING

At Close of Business on December 31, 1912

Assets				Liabilities and Capital			
Current Assets:				Current Liabilities:			
Cash in bank	$ 6,370.00			Wages due	$ 2,250.00		
Cash in safe	1,570.00	$ 7,940.00		Accounts payable	19,800.00		
Accounts receivable	23,100.00			Notes payable	16,370.00		
Less reserve for bad debts	3,750.00	19,350.00		Total current liabilities			$ 38,420.00
Notes receivable		14,400.00		Fixed Liabilities:			
Total current assets			$ 41,690.00	Mortgage payable	10,000.00		
Investments			12,000.00	Special loan	15,000.00		
Inventories:				Total fixed liabilities			25,000.00
Merchandise		18,400.00		Total liabilities			63,420.00
Goods in process		4,800.00		James G. Keating's Net Worth:			
Raw material		11,500.00	34,700.00	Investment	50,000.00		
Deferred Charges to Operating:				Net profit for 1912	13,620.00		
Taxes and insurance prepaid		190.00		Present net worth			63,620.00
Interest prepaid		95.00	285.00				
Accrued Items:							
Interest accrued			545.00				
Fixed Properties:							
Real estate	22,000.00						
Machinery and tools	11,000.00	33,000.00					
Less reserves for depreciation		4,380.00					
		28,620.00					
Furniture and equipment		6,000.00					
Delivery equipment		3,200.00	37,820.00				
Total fixed properties							
Total			$127,040.00	Total			$127,040.00

FIG. 3

JAMES G. KEATING

Statement of Assets and Liabilities December 31, 1912

Current Assets:	*Assets*		
Cash in bank	$ 6,370.00		
Cash in safe	1,570.00	$ 7,940.00	
Accounts receivable	23,100.00		
Less reserve for bad debts	3,750.00	19,350.00	
Notes receivable		14,400.00	$ 41,690.00
Total current assets			
Investments			12,000.00
Inventories:			
Merchandise		18,400.00	
Goods in process		4,800.00	
Raw material		11,500.00	34,700.00
Deferred Charges to Operating:			
Taxes and insurance prepaid		190.00	
Interest prepaid		95.00	285.00
Accrued Items:			
Interest accrued			545.00
Plant Assets:			
Real estate	22,000.00		
Machinery and tools	11,000.00	33,000.00	
Less reserve for depreciation		4,380.00	
		28,620.00	
Furniture and equipment		6,000.00	
Delivery equipment		3,200.00	
Total fixed properties			37,820.00
Total			$127,040.00
	Liabilities and Net Worth		
Current Liabilities:			
Wages due		$ 2,250.00	
Accounts payable		19,800.00	
Notes payable		16,370.00	
Total current liabilities			$ 38,420.00
Fixed Liabilities:			
Mortgage payable		10,000.00	
Special loan		15,000.00	
Total fixed liabilities			25,000.00
Total liabilities			63,420.00
James G. Keating's Net Worth:			
Investment		50,000.00	
Net profit for 1912		13,620.00	63,620.00
Total			$127,040.00

FIG. 4

frequently placed on the liability side of the statement. Note the changes in heading of the different forms exhibited; also, that the right-hand side of the statements are headed Liabilities and Net Worth. It will be seen that the assets begin by recording the fixed or permanent assets at the top and the current last; a like arrangement is shown for the liabilities. In Fig. 1, the liability side begins with the capital account, and ends with net profits for the year; in Fig. 2 the capital and profits are shown at the end.

24. The balance sheet shown in Fig. 3 is the reverse of the one shown in Fig. 2 because it begins with current assets or those first to be realized, and ends with the fixed, or those which are last to be realized. A like arrangement is shown for the liabilities. This form is frequently used by corporations. It exhibits in the most prominent location the assets that are first to be collected and the liabilities first to be paid. Since these generally require the immediate attention of the management, they are listed first, though it is not uncommon for the opposite plan to be followed. It will be seen that the rulings are more extensive than in some other forms, thus indicating the plan frequently followed by some accountants. Note the change of heading, both in name and in arrangement; also, observe that the right-hand column is headed Liabilities and Capital. Sometimes the balance sheet is so wide that it cannot be contained on one page, in which case a large sheet is used and folded between the other leaves. In this form the reserves are deducted from the accounts to which they belong, and both assets and liabilities exhibit the true totals.

25. The balance sheet shown in Fig. 4 is almost exactly the same as the one shown in Fig. 3 except as to arrangement. Assets are listed first, and the liabilities and net worth next thereunder. It will be seen that each side is ruled up completely. Sometimes the total assets are carried into an outer column and then the total liabilities deducted therefrom, leaving the balance or net worth; then the net worth is analyzed and shown very much as it is here. In a corporation, the analysis of net worth would include capital stock, profits, surplus, etc.

26. Balance Sheet of a Savings Bank.—In Fig. 5 is shown a statement of condition of a regular savings bank. This bank is one of the oldest, largest, and strongest of its kind in America, having been organized in the year 1819. The deposits aggregate $114,000,000. It is intended for wage earners and will not accept more than $3,000 from any one depositor, nor more than $500 in any one year. Note that there is no capital stock. The funds belong to the depositors, and the bank's affairs are managed by a board of trustees.

Report of the Condition of

THE PHILADELPHIA SAVING FUND SOCIETY OF PHILADELPHIA

Nos. 700 to 710 Walnut Street

of Philadelphia County, Pennsylvania, at the close of business May 1, 1913

RESOURCES

Cash on hand		$ 2,158,490.47
Due from banks and bankers		4,499,073.26
Investment securities owned, viz.:		
Public loans	$109,818,914.51	
Mortgages	10,239,421.78	120,058,336.29
Real estate		155,000.00
		$126,870,900.02

LIABILITIES

Surplus fund	11,169,073.63
Undivided profits, less expenses and taxes paid	1,887,217.38
Deposits	113,814,609.01
	$126,870,900.02

FIG. 5

27. Balance Sheet of a Trust Company.—Fig. 6 shows the balance sheet of a large trust company with its supplementary information. Trust companies are coming more and more into prominence, and their functions are closely analogous to those of the regular national and state banks. Their restrictions, however, are marked in some states, wherein they are confined to the handling of business for which they were originally intended, that of trusts in their correlative features. Note that the capital or net worth of this company is made up of capital stock, surplus, and undivided profits aggregating $12,576,047.70. Its stock sells for about $900 per share of $100 par. Note the magnitude of its trust connections.

GIRARD TRUST COMPANY

Philadelphia, Pa.

Statement at the close of business, May 1, 1913

ASSETS

Cash on hand		$ 2,715,581.27
Exchange for clearing house		2,185,292.91
Due from banks and bankers		4,970,368.57
Collateral loans		23,147,098.57
Investment Securities:		
Stocks, bonds, etc.	$14,275,718.84	
Mortgages	190,893.43	
		14,466,612.27
Real estate		2,876,359.58
Overdrafts		536.79
		$ 50,361,849.96

LIABILITIES

Capital	2,500,000.00
Surplus	7,500,000.00
Undivided profits (less expenses and taxes paid)	2,576,047.70
Dividend unpaid	575.00
Deposits	37,785,227.26
	$ 50,361,849.96

SUPPLEMENTARY

1.	Amount of Trust Funds:	
	(*a*) Invested	$ 144,978,029.54
	(*b*) Uninvested (including principal and income awaiting distribution, sinking funds, etc.)	2,570,837.10
	(*c*) Special equipment trust fund	3,083,332.00
	Total	$ 150,632,198.64
2.	Corporate Trusts:	
	(*a*) Total amount (i. e., face value) of trust under deeds of trust or mortgages executed by corporations to the company as trustee to secure issues of corporate bonds, including equipment trusts	$1,035,925,166.66
	(*b*) Total amount of securities deposited by corporations with the company as trustee to secure issues of collateral trust bonds	303,011,809.66

E. B. MORRIS, President.

C. J. RHOADS, Treasurer.

FIG. 6

28. Balance Sheet of a Manufacturing Company.—In Fig. 7 is shown the assets side and in Fig. 8 the liabilities side of the balance sheet of a large manufacturing company and its subsidiary companies, as prepared by a leading firm of certified

CONSOLIDATED GENERAL BALANCE SHEET, MARCH 31, 1912

ASSETS

Property and Plant:		
Factory plants—real estate, buildings, equipment, etc...		$19,195,188.06
Sinking Fund:		
With trustee for redemption of convertible sinking fund, 5-per-cent. gold bonds.....		444.37
Investments:		
Stocks, bonds, debentures, etc., including those of affiliated European and Canadian subsidiary companies..		23,384,515.56
Current Assets:		
Cash.....	$8,340,081.09	
Cash on deposit to pay interest coupons.	89,617.50	
Cash on deposit to pay dividends on preferred stock.....	610.22	
Notes receivable.....	3,395,425.98	
Accounts receivable.....	7,976,043.58	
Due from subscribers to capital stock....	46,927.88	
Total current assets.....		19,848,706.25
Working and Trading Assets:		
Raw material and supplies, finished parts and machines, work in progress, goods on consignment and apparatus with customers.....		13,119,286.13
Other Assets:		
Patents, charters, and franchises.....	$6,097,742.22	
Insurance, taxes, etc., paid in advance...	71,437.80	
Deferred charges—expenses incidental to issue of bonds and notes.....	903,333.34	
Total other assets.....		7,072,513.36
Total.....		$82,620,653.73

FIG. 7

public accountants. It is a companion statement to the profit-and-loss statement given previously. By studying the two, a better insight can be had into the harmonious arrangement of items. Special attention should be given to the various assets and liabilities and the clear manner in which they are divided.

CONSOLIDATED GENERAL BALANCE SHEET, MARCH 31, 1912

LIABILITIES

Capital Stock:			
Preferred		$ 3,998,700.00	
Common—in hands of public	$35,193,287.50		
In treasury	1,507,000.00	36,700,287.50	
Total capital stock			$40,698,987.50
Funded Debt:			
Convertible sinking fund, 5-per-cent. gold bonds, due January 1, 1913:			
Total issued	$22,614,000.00		
Retired through sinking fund	2,670,000.00	19,944,000.00	
Debenture certificates, 5 per cent., due July 1, 1913		1,540,000.00	
Bonds—Walker Company, due January 1, 1916, guaranteed by		850,000.00	
Total funded debt			22,334,000.00
Collateral Notes:			
Six-per-cent. collateral notes, due August 1, 1913		$ 4,000,000.00	
Five-per-cent. collateral notes, due October 1, 1917		2,720,000.00	
Total collateral notes			6,720,000.00
Long-Term Notes:			
Four-year 5-per-cent. notes due January 1, 1913		$ 429,900.00	
Five-year 5-per-cent. notes due January 1, 1914		429,500.00	
Six-year 5-per-cent. notes due January 1, 1915		425,500.00	
Fifteen 5-per-cent. notes due January 1, 1924		98,750.00	
Total long-term notes			1,383,650.00
Real-estate purchase-money mortgages			493,000.00
Current Liabilities:			
Accounts payable		$ 2,187,666.44	
Interest, taxes, royalties, etc., accrued, not due		437,502.84	
Dividend on preferred stock, payable April 15, 1912		69,977.25	
Dividend on common stock, payable April 30, 1912		352,117.50	
Unpaid dividends on preferred stock		610.22	
Total current liabilities			3,047,874.25
Reserve:			
For adjustments of inventories, notes, and accounts receivable, etc.			1,294,177.69
Profit and loss—surplus			6,648,964.29
Total			$82,620,653.73

29. Balance Sheet of a Public-Service Corporation. In Fig. 9 is shown a balance sheet that comprises page 19 of the annual report of the Public Service Commission of the state of New York. It is a companion to the income account shown previously. As will be observed, the columns for the current and previous years are for comparative purposes. The net changes during the year, whether increase or decrease, are recorded in the two right-hand columns. The figures in parentheses indicate the pages of the 76-page report, in which details may be found.

By outside operations, as here used, are meant those other than electric and gas; for example, street-railroad operations, commercial water supply, paper-pulp and other manufacturing operations, etc. Electric operations are those incident to the production of electric energy to other companies and to consumers, the administration of the property employed, and the collection of revenues, including herein the disposition of by-products. Gas operations are those incident to the production and distribution of gas (either artificial or natural) to other companies and to consumers, the administration of the property employed, and the collection of the revenues, including herein the disposition of residuals and by-products. *Organization* includes cost of incorporation, engraving, and issuing certificates of stock, etc. It should not include any expense connected with the cost of preparing and issuing bonds or other evidence of indebtedness, or any cost of land, or buildings, machinery, or other tangible property. Lands devoted to electric and gas operation do not include any land held as an investment. If the respondent is engaged in both electric and gas operations, and it is impracticable to state separately the materials and supplies for these two classes of operations, the two items may be bracketed.

30. Examples of Statements.—In order to illustrate the way in which statements of operations and balance sheets may be made up, use is made of the trial balance shown in Fig. 10. This trial balance shows the accounts of the Brown-Davis Manufacturing Company on December 31, 1912, after it has

ASSETS SIDE

Line No.	Dec. 31, 1907 (a)	Item (b)	Dec. 31, 1908 (c)	Net Change Decrease (e)	During Year Increase (d)
1	$ c.	Organization	$ c.	$ c.	$ c.
2		Franchises—Electric (p.20)			
3		Land devoted to electric operations (p. 20)			
4		Other fixed capital—Electric (p. 22)			
5		Franchises—Gas (p. 21)			
6		Land devoted to gas operations			
7		Other fixed capital—Gas			
8		Capital employed in outside operations			
9		Materials and supplies—Electric			
10		Materials and supplies—Gas			
11		Cash			
12		Bills receivable			
13		Accounts receivable			
14		Other current assets			
15					
16					
17		Investments: (p. 24)			
18		Funded debt of other corporations			
19		Stocks of other corporations			
20		Advances to subsidiary and affiliated companies			

25		
26	Corporate deficit (p. 53)	
27	Grand total	

LIABILITIES SIDE

28	Funded debt (p. 26)	
29	Current liabilities matured and unpaid (p. 28)	
30	Current liabilities unmatured (p. 28)	
31	Due less company for additions and betterments	
32	Due controlling and affiliated companies for advances	
33		
34	Reserves:	
35	Reserve for replacements and renewals	
36	Reserve to cover sinking funds	
37	Reserve for extensions and improvements	
38	Other reserves	
39		
40	Capital stocks (p. 25)	
41	Corporate surplus (p. 53)	
42	Grand total	

TRIAL BALANCE, DECEMBER 31, 1912

Capital stock		$ 50,000 00
Unsubscribed stock	$ 12,900 00	
Land and buildings	10,000 00	
Plant and machinery	13,600 00	
Furniture and fixtures	250 00	
Horses and wagons	1,100 00	
Patents	1,200 00	
Good-will	2,500 00	
Bills and notes receivable	6,840 00	
Accounts receivable	10,150 00	
Investments	3,500 00	
Cash	16,810 00	
Loans and mortgage		2,500 00
Bills and notes payable		6,500 00
Accounts payable		9,240 00
Reserve for bad debts		200 00
Organization expenses	1,420 00	
Merchandise inventory	5,400 00	
Purchases	55,660 00	
Freight inbound	1,120 00	
Labor, factory, and salesroom	24,200 00	
Sales		124,180 00
Discount on sales	3,260 00	
Discount on purchases		880 00
Advertising	5,610 00	
Taxes and insurance	430 00	
Interest and discount	290 00	
Salaries, officers and clerks	11,400 00	
Expenses, stable	1,140 00	
Expenses, office	4,370 00	
Repairs, machinery and buildings	350 00	
	$193,500 00	$193,500 00
Inventories December 31, 1912:		
Merchandise, finished and unfinished	4,640 00	
Factory pay roll, accrued but not paid	2,150 00	
Unexpired insurance	70 00	
Interest accrued on investments	105 00	
Allow for depreciation as follows:		
Four per cent. off land and buildings; 5 per cent. off plant and machinery; 10 per cent. off horses, wagons, and patents; and $200 off accounts receivable for possible bad debts		

FIG. 10

Exhibit A

BROWN-DAVIS MANUFACTURING COMPANY

Manufacturing and Trading Account December 31, 1912

Costs			Sales	
Inventory, January 1, 1912		$ 5,400.00	Sales	$124,180.00
Purchases		55,660.00		
Freight, inbound		1,120.00		
Labor, factory, and salesroom		24,200.00		
Accrued factory payroll		2,150.00		
Advertising		5,610.00		
Taxes and insurance	$430			
Less, prepaid	70	360.00		
Repairs, machinery, and buildings		350.00		
Stable expenses		1,140.00		
Depreciation:				
Off buildings, 4 per cent.	$400			
Plant and machinery, 5 per cent.	680			
Horses and wagons, 10 per cent.	110			
Patents	120	1,310.00		
Total costs		97,300.00		
Deduct:				
Finished and unfinished merchandise		4,640.00		
Cost of goods sold		92,660.00		
Gross profit carried to profit-and-loss account		31,520.00		
		$124,180.00		$124,180.00

FIG. 11

been in operation for 1 year. The various inventories and accrued charges are given, and it is assumed that all subscriptions to stock have been paid in. In this case, one-half of the

PROFIT-AND-LOSS ACCOUNT Exhibit B

For Year Ended December 31, 1912

Debits		Credits	
Organization expenses	$ 710.00	Gross profit from manufacturing and trading account	$31,520.00
Discount on sales	3,260.00		
Interest and discount	290.00	Discount on purchases	880.00
Salaries, officers and clerks	11,400.00	Interest accrued on investments	105.00
Office expenses	4,370.00		
Reserve for bad debts	200.00		
Total charges	20,230.00		
Net profit	12,275.00		
	$32,505.00		$32,505.00

FIG. 12

organization expenses are to be written off and the other half carried over into the following year. Figs. 11, 12, and 13 show the statements and Fig. 14 the balance sheet. These are not

COMPARATIVE PERCENTAGE STATEMENT Exhibit D

	Based on Sales			Based on Turnovers		
	1912	1911	Increase or Decrease	1912	1911	Increase or Decrease
Gross profit	25.4			34.0		
Net profit	9.9			13.1		
Labor, $26,350	21.2			28.4		
General expense, $20,230	16.7			21.8		

FIG. 13

given as model forms, but simply to show the manner of compiling information from data submitted. Comparison cannot be made because this is the first year of business.

Exhibit C

BROWN-DAVIS MANUFACTURING COMPANY

Balance Sheet, December 31, 1912

Assets			Liabilities and Capital		
Fixed Assets:			Fixed Liabilities:		
Land and buildings	$10,000		Loans and mortgages		$ 2,500.00
Plant and machinery	13,600		Current Liabilities:		
Furniture and fixtures	250		Bills and notes payable	$ 6,500	
Horses and wagons	1,100		Accounts payable	9,240	
Patents	1,200	$26,150.00	Accrued payroll	2,150	17,890.00
Current Assets:			Reserve Accounts:		
Bills and notes receivable	6,840		Depreciation on buildings	400	
Accounts receivable	10,150		Depreciation on machinery	680	
Investments	3,500		Depreciation on horses and wagons	110	
Cash	16,810		Depreciation on patents	120	
Merchandise finished and unfinished	4,640	41,940.00	For bad debts	400	1,710.00
Other Assets:			Total liabilities		22,100.00
Good-will	2,500		Capital stock	50,000	
Organization expenses less one-half	710		Unsubscribed	12,900	
Unexpired insurance	70		Outstanding	37,100	
Interest accrued on investments	105	3,385.00	Add net profit	12,275	
Total assets		71,475.00	Present net capital		49,375.00
		$71,475.00			$71,475.00

FIG. 14

CAPITAL AND REVENUE

31. As a study of the two classes of accounts, the real and the nominal, has already been made, another step will now be taken in distinguishing between entries affecting either one or the other. The outlay of a business is divided between capital and revenue; in other words, each item of outlay is a charge either to permanent assets, as plant and equipment, or to profit and loss. Capital, in the broader sense, has reference to the tools with which one earns an income, as cash, land, buildings, machinery, equipment, etc. Revenue, in contradistinction to capital, means the income or profit derived from business dealings, as the income from the sale of goods, income from investments, etc. Outlays for the purchase or extension of plant and equipment are termed *capital charges*, because they increase the capital assets. Income derived from the sale of anything previously capitalized, as property or plant, is known as *capital income*. Similarly, outlays for running expenses, purchase of goods, repairs and maintenance, or plant are known as *revenue charges;* and income derived from the sale of goods, from interest and dividends, etc., as *revenue income*. Money received from the sale of bonds or mortgages is termed capital income, and when paid for their redemption, *capital outlay*. Capital items are those affecting assets and liabilities, and revenue items are those affecting profits and losses.

32. The proper distinction between capital and revenue charges is important, and as it is difficult at times to draw the line, many errors of principle are made, either intentionally or inadvertently. Revenue expenditures should never be capitalized, because that both inflates the value of the property and produces fictitious profits. The overvaluation of an inventory will obviously produce a corresponding increase in profits, but unless this method of overstating is continued from year to year it is evident that a slump must come sooner or later.

This will happen as soon as the inventory is again correctly valued, during which year the profits will be correspondingly lower than they would have been had the preceding inventory not been overstated. The folly of such a plan is obvious, though it is often adopted during years of business depression in which the directors find it difficult to present a good statement. Under such conditions the temptation to inventory everything at a high valuation is hard to resist. Even repairs to plant and other maintenance expenses are frequently capitalized, but this should not be done; they are a charge against revenue.

33. Distinction Between Capital and Revenue.—It is difficult at times to distinguish between capital and revenue, or even to decide on an equitable distribution. This has particular significance when applied to such items as construction, replacements, repairs, maintenance, and improvements. In any case, a conservative attitude should be maintained, and if an error in judgment occurs it should be on the side of safety. The following suggestions are given as an aid in properly interpreting capital and revenue charges:

Charge to capital: (1) anything that is to exist as an asset at the end of the year; (2) outlay for permanent increase in property values; (3) outlay to increase the plant capacity or production; (4) outlay that belongs to a subsequent period, or that should be spread over a term of years; and (5) outlay for additions or permanent improvements.

Charge to revenue: (1) anything that belongs to and is consumed during the current fiscal period; (2) depreciation and extinguishment charges of plant and equipment; and (3) current operating expenses.

34. Paying Dividend Out of Capital.—The necessity for distinguishing between capital and revenue (or principal and income) is apparent in cases where dividends are paid out of capital. In other words, fictitious profits are usually shown for the purpose of creating dividends, without any thought of the results or of the fact that state laws usually prohibit such practice. This is brought about by failing to provide adequate

depreciation allowances, by overstating inventories, by omission of liabilities that should be included, by capitalizing revenue charges, etc. If the capital or principal is to be maintained intact, it is unwise for any board of directors to declare dividends before setting aside a sufficient amount for reserves and a fair amount to the surplus account. There is no doubt that this basic principle is frequently violated. Of course, if no one raises any objection, and if it comes out all right in the end, there may be no harm done; yet the desire for high dividends should not be encouraged by stockholders to the extent of crippling the company's financial standing. The owners gain nothing by milking the treasury dry for the payment of dividends when they know very well that future prospects are jeopardized by such payment. Even if the assets are increased for the purpose of creating fictitious profits, it is apparent that this does not provide the necessary cash for dividend purposes. In that event, current funds required for business needs must be used, thereby retarding future business operations; in lieu of this, money must be either borrowed or appropriated from some other fund if such a fund exists. This is not good practice, however, because in any case the money must be repaid to the agency from which it was borrowed.

35. Examples of Capital Outlay.—In a going business, the following items may be considered a charge against capital, but it is apparent that all or most of them should be gradually written off against revenue. These are indicative of many others that could be included: Purchase of plant and equipment, including freight and inbound charges; additions to plant and equipment; improvements and betterments; cost of construction; good-will of a going concern; patents, trade marks, and patterns; incorporation expenses, to be spread over a few years; interest on bonds, during course of construction; dividends on capital invested, during construction; discount on bonds issued, to be spread over a term of years; furniture and fixtures; office, plant, and delivery equipment; development costs, as uncovering a quarry or a mine; and street grading or improvements for a railway company.

36. Examples of Revenue Outlay.—The following list includes a few of the items that may be charged to revenue; it could be extended considerably: Merchandise purchases; operating expenses; selling and delivery expenses; office and administrative expenses; factory labor and salaries; repairs and replacements; maintenance and upkeep; and interest and discount.

37. Distribution of Doubtful Items.—There are many items of a doubtful nature that must be set aside for either capital or revenue, or for both in proper proportions. A few of them are as follows: Interest on bonds and discount on bonds issued, which items are permitted by the Interstate Commerce Commission only for the period during construction, after which they become a charge against revenue; dividends on capital invested during construction, sometimes capitalized; experimental department costs, sometimes capitalized; improvements that may or may not increase the efficiency of the property; the net loss in the business under construction, as a fish hatchery; replacements of worn-out or spoiled machines; remodeling of stores and buildings; and replacement cost, as of a damaged bridge or property destroyed by fire.

There are, of course, many book entries that do not affect either capital or revenue. These include canceling entries, payments on account, payment of notes, etc. It will be seen that these constitute the substitution of one current asset for another or the settlement of a current liability.

DEPRECIATION, APPRECIATION, RESERVES, AND SURPLUS

DEPRECIATION

38. Depreciation has reference to the reduction in value of assets, as buildings, equipment, machinery, tools, and other fixed assets of a business. As destruction is a law of nature, all property, with the possible exception of land, must inevitably reach the end of its usefulness. Of course, this end may be delayed to some extent by repairs and improvements; yet it cannot be prevented. For this reason, it is very important that the matter of depreciation be taken into account, especially in connection with fixed assets.

39. Causes of Depreciation.—The causes of depreciation are wear and tear of assets in use; rusting, rotting, and decay; consumption and loss; obsolescence; and change of fashion. Wear and tear is the gradual destruction of the property in the operation of business, and in the case of machinery or equipment designed for manufacturing purpose, it is a part of the cost of production. Rusting, rotting, and decay deteriorate and destroy property whether in use or not. In fact, machinery deteriorates more rapidly as a rule when it is standing idle than when it is in use and is being properly cared for. Consumption and loss of minor tools and sundries is inevitable. In many cases these cannot be accounted for. Obsolescence refers to the disuse of machinery or equipment, owing to its necessary replacement by the more modern invention. This is a condition brought about by the onward march of improvement in all mechanical lines and by the sharp competition in progressive undertakings. Changes of fashion and of condition cause depreciation or fluctuation downwards in value by the constant demand for new things, by which the older are pushed aside

and the equipment necessary for their production disused. This is apparent in the case of department stores where special sales are advertised from time to time as a means of clearing out the old stock of goods.

40. Care of Depreciation.—Depreciation must be taken care of, or it will absorb the capital investment. It is in fact expired capital outlay that must be charged either to production or to profit and loss. In the case of short-lived machinery or tools that are exhausted in production, it is proper to charge the depreciation as part of the cost of manufacture; thus,

Depreciation Dr. and Machinery Cr.

The depreciation account is then closed into work-in-progress account.

Work in Progress Dr. and Depreciation Cr.

General depreciation of plant and fixtures, however, is more properly charged to profit and loss; thus,

Depreciation Dr. and Plant and Fixtures Cr.

An entry is then made to close depreciation account into profit and loss; thus,

Profit and Loss Dr. and Depreciation Cr.

Instead of opening a depreciation account, the amount of depreciation might be charged directly to profit and loss. However, when monthly apportionments of depreciation are made, it is preferable to use the depreciation account.

41. Various methods are employed in caring for depreciation, each of which has its merits. They are as follows: (1) By charging off even portions yearly of the original value; (2) by charging off an annual percentage of the diminishing value; and (3) by offsetting depreciation with maintenance.

1. Assuming the original cost of a machine to have been $1,000, and that one-tenth part is to be written off each year for the 10 years, the account would appear about as shown in Fig. 15.

In case an additional machine is purchased at a cost of $500 and charged to this account, the annual amount to be charged off would increase from $100 to $150. Other additions or improvements would be handled in a similar manner.

2. Using the same illustration, it will be assumed that 10 per cent. of the remainder or diminishing value is written off each year. The differences in principle and in final results

MACHINERY ACCOUNT

To investment	$1,000.00	1. By depreciation	$ 100.00
		2. By depreciation	100.00
		3. By depreciation	100.00
		4. By depreciation	100.00
		5. By depreciation	100.00
		6. By depreciation	100.00
		7. By depreciation	100.00
		8. By depreciation	100.00
		9. By depreciation	100.00
		10. By depreciation	100.00
	$1,000.00		$1,000.00

FIG. 15

are apparent in the illustration of the same account, which is shown in Fig. 16.

By comparing the two illustrations, conclusions may be drawn as to which is preferable. In the first, an even amount is written off annually, regardless of repairs and replacements,

MACHINERY ACCOUNT

To investment	$1,000.00	By depreciation	$100.00
		Balance	900.00
To balance	900.00	By depreciation	90.00
		Balance	810.00
To balance	810.00	By depreciation	81.00
		Balance	729.00
To balance	729.00	By depreciation	72.90
		Balance	656.10
To balance	656.10		
	and so on		

FIG. 16

and not even a scrap value is left at the end of 10 years. At the end of that time, or even a longer term of existence, the property might be of considerable value and good for several years. The second illustration seems more logical, because it

distributes the burden more equitably and provides for a residual value at all times. It throws the heaviest charge for depreciation on the first few years and then gradually decreases as the efficiency of the property decreases. The increased outlay for repairs during the last few years of the life of the machine tends to equalize the heavy charge for depreciation during the early years. Repairs should, of course, be charged to the repairs account and then closed off into profit and loss. Additions or permanent improvements should be charged to the property account and then subjected to the same process of depreciation as the original property.

In some cases where the outlay for repairs is likely to be heavy in the later years, it might even be well to assume a ratio showing a greater variation in results than the preceding. The following is an illustration:

Year		
1	$180.00	
2	162.00	
3	144.00	
4	126.00	
5	108.00	
6	90.00	
7	72.00	
8	54.00	
9	36.00	
10	28.00	Balance
	$1,000.00	

3. The property may be maintained at its original value by repairs, replacements, and additions, and charging such expenditures to production or to profit and loss. In this case no depreciation is charged off. Many prudent business men take the stand that while the property is well cared for and being maintained in good condition there is no necessity for considering additional charges to depreciation. They maintain, also, that the increasing value of property fully offsets any depreciation that might be considered, and that if provision is made for depreciation a like provision must be made for appreciation.

42. Reserve for Depreciation.—The more generally approved method of entering depreciation on the books is to set up a reserve account and to credit it each year with the amount written off, making a corresponding charge to profit and loss. By this method both the property account and the reserve-for-depreciation account stand open on the books and in the trial balance. In the balance sheet, however, it is desirable to show the reserve deducted from the asset in the following manner:

Plant and machinery	$1,000.00	
Less reserve and depreciation	300.00	$700.00

There is a decided advantage in this plan of entering depreciation, because it shows at any time the assets on the books at their original cost. In case of loss by fire, it is hard to convince the adjuster that an asset is worth more than is shown in the account.

A separate reserve account may be opened for each class of property, or else a general reserve account made to include them all. It should be borne in mind that reserves are not surplus profits, but merely deductions from and negatives to

MACHINERY ACCOUNT

To cash	$1,000.00		

FIG. 17

the corresponding asset accounts and cannot be paid out in dividends.

The manner of handling the reserve-for-depreciation account is illustrated here by means of the preceding figures. The property account remains at its original value, as shown in Fig. 17.

Assuming that reserves for depreciation on a 10-per-cent. basis have been made for 4 years, the reserve account would appear as shown in Fig. 18.

If new machines are added to the machinery account, a corresponding increase must be made to the reserve. Assuming that the machine under discussion is worn out at the end of 10 years, at which time the reserve is adequate to take care of it, an entry like that shown in Fig. 19 would be required.

The old machine may be sold as scrap for a nominal sum, which could be credited to profit and loss or some other account.

RESERVE FOR DEPRECIATION

	1. By profit and loss	$100.00
	2. By profit and loss	100.00
	3. By profit and loss	100.00
	4. By profit and loss	100.00

FIG. 18

If the machine becomes worthless or obsolete before the time estimated, the reserve will of course be insufficient to offset the entire cost. In such a case the excess must be charged to profit and loss.

New purchases of machinery should be charged to the machinery account, as heretofore, and the process of reducing

Reserves for depreciation	$1,000.00	
To machinery account		$1,000.00

FIG. 19

by means of reserves begun at the end of the first or the second year. The new property, however, has nothing to do with the original plant or with the depreciation thereof. If a general depreciation reserve account is maintained for the benefit of all properties, then all obsolete or worn-out machines may be charged to it and credited to the property account affected.

Profit and loss	$100.00	
To reserve for depreciation		$100.00
For 10 per cent. allowed for depreciation on the original value of machinery, per inventory sheets.		

FIG. 20

Returns from scrap sales should then be credited to the reserve account. The reserve in that case must be maintained at a safe amount in order adequately to care for any and all discarded machines or other assets.

The entry required at the end of each year for the depreciation decided on is as shown in Fig. 20.

If a monthly estimate of depreciation is required, it may be shown on sheets used for that purpose, or it may be placed on the books as indicated in Fig. 21.

Depreciation account	$8.33	
To reserve for depreciation		$8.33

FIG. 21

At the end of the year, the depreciation account is closed into profit and loss.

43. Estimating Depreciation.—It is not possible to establish rules for determining the exact rate or ratio at which depreciation of properties will occur. It varies with different kinds of assets and with the care given to the articles. The effect in each business and its determination is largely a matter of experience and good judgment. Judging from past experience, however, it is possible to determine with reasonable certainty the life of a given property. If it is likely to last for 20 years, then a fair rate would be 5 per cent. on the original cost or perhaps 10 per cent. on the diminishing value. It is apparent in any case that the rate in diminishing values must be higher than the fixed rate on the original unchanging value. Tables of depreciation rates and values for different kinds of properties have been prepared and carefully compiled by engineers and accountants, and these might be of service to persons having to deal with such matters.

44. Land in large centers rarely depreciates, though building and improvements always depreciate. The tendency of land is to increase in value, especially in large cities, and in some cases the increment in the land value is allowed to offset the depreciation of the buildings. This does not seem wise, as the buildings will inevitably have to be renewed and renewal cannot be made simply by applying a book increase of real estate. The cash is required for that purpose. On the other hand, the increase in land value is not a business profit, and it should, if taken into account at all, be treated as an increase of the surplus or capital of the concern. If the increase were taken as a business profit, the fiscal period would contain an

inflation of profits beyond that legitimately earned from business operations, and this would greatly interfere with the value of comparative statistics of profits from year to year. The depreciation of properties on the other hand is a direct and proper charge to the production expense of the period in which

Land account	$10,000.00	
To surplus		$10,000.00
For permanent increase in value of land per recent appraisement, by order of the directors.		

FIG. 22

it occurs. A permanent increase in value of land if taken at all should be entered either to surplus or to a permanent reserve account. The entry may be as shown in Fig. 22.

For any estimated decrease in value as shown by appraisement, the entry shown in Fig. 23 is necessary, in case the property itself is not written down in the account.

Profit and loss	$500.00	
To reserve for depreciation		$500.00
To cover deterioration of properties during the fiscal period.		

FIG. 23

45. Machinery is supposed to depreciate from 10 to 20 per cent. a year, but inventions and improvements will often render replacement necessary long before the estimated time has been reached. If the new acquisition is capitalized, the remainder of the discarded plant must be charged off at once, either to profit and loss or to the depreciation reserve account—to the latter if it is adequate.

In determining the rate of depreciation, the ultimate value of the asset may be first deducted from the original cost, as there is usually a scrap value to an otherwise useless property. This need not be offset, as the depreciation should cover only that which is lost and not the residual sale value, which is saved and transferred into another asset.

Some authorities contend that depreciation should be charged not only with the loss that it replaces but also with the interest on the cost of the asset during its life. If this is done, the total interest is evenly divided during the years of the depreciation

charge and is credited in yearly increasing amounts to the interest account. The result is a burden to revenue, thereby reducing profits more heavily on the earlier years; but there does not seem to be justification for burdening capital locked up in this transaction with interest, any more than other capital used in various ways in the conduct of the business.

Depreciation charges are designed to cover the shrinkage in fixed assets only; depreciation of salable assets, stock in trade, and merchandise is often much more rapid, but it is usually taken care of in the reduction of profits over and above the gross cost. Sometimes these fluctuations are shown separately in the profit-and-loss statement, especially in the case of reductions. Many assets, as loose tools or merchandise, are preferably revalued yearly.

APPRECIATION

46. Appreciation means the increase in value of a property; it is not unusual and at times requires a book entry. Increase in the value of salable assets, stock in trade, and merchandise is taken care of by the increase in profits over gross cost, but with capital assets it must, if considered at all, be cared for on the books.

47. In the delivery equipment of an active company where ten horses have been depreciated from their original cost of $2,000 down to $500 and then five of them sold for $750, it would suggest a new valuation for the remaining five, and besides, account must be taken of the $250 profit that has arisen as an outcome of the sale. In such a case, the management evidently erred in charging off too much for depreciation in former years. It would seem proper that both the $250 and the new valuation of the remaining horses be taken as a profit

Cash (cash book)	$750.00	
To equipment		$750.00
For the sale of five horses.		

FIG. 24

of the year's business, though not as a credit to profit and loss, but preferably to surplus. The adjusting entries affecting the transaction may be stated in the manner shown in Fig. 24.

As the depreciation reserve account now stands credited with $1,500 and the equipment account with a debit of only $1,250, it is apparent that some alteration is necessary. If five of the horses sold for $750, it might be assumed that the other five are worth just as much, on an original cost of $2,000. The entry shown in Fig. 25 will adjust the equipment account against the reserve.

Reserve for depreciation	$250.00	
To equipment		$250.00
Reduction of book value of horses to the present sale value.		

Fig. 25

The equipment now stands at $1,000 and the offsetting reserve at $1,250. In order to bring them into harmony, the entry shown in Fig. 26 is made.

Reserve for depreciation	$250.00	
To profit and loss		$250.00
For adjustment of reserve account to the cost value of delivery equipment.		

Fig. 26

The ledger accounts after all adjustments are made appear as shown in Fig. 27.

Delivery Equipment

Cost. ten horses	$2,000.00	Sales of five horses	$ 750.00
		Reserve	250.00
		Balance	1,000.00
	$2,000.00		$2,000.00
Balance	$1,000.00		

Depreciation Reserve

Equipment	$ 250.00	For ten horses	$1,500.00
Profit and loss	250.00		
Balance	1,000.00		
	$1,500.00		$1,500.00
		Balance	$1,000.00

Fig. 27

It might seem desirable to eliminate the reserve of $1,000 and place it to the credit of surplus, but in that case the annual appropriation for the depreciation of equipment would have to be started again.

RESERVES

SPECIAL RESERVES

48. A **reserve** implies that which is reserved, or kept back, for future use, set aside for a purpose, such as a land reserve; a reserve of money or funds; the lawful reserve of the United States treasury ($150,000,000); bank reserve, with ordinary banks 15 per cent., and with reserve and central reserve banks 25 per cent., of their deposits; and insurance reserve. All these reserves, however, have reference to assets; the specific reserves now to be taken up refer to reserves from profits.

Reserves are a charge against profits and are generally set aside for definite and specific purposes; as, general reserve; reserve for bad debts; reserve for depreciation; reserve for equalizing dividends; reserve for insurance; reserve for sick benefits, discounts, and expenses; and reserve for bond redemption.

49. **General reserve** is really another name for surplus, which is explained later, being merely a reserve for unforeseen contingencies.

50. Bad debts are almost certain to occur in every business, and unless a generous surplus is maintained a **reserve for bad debts** should be carried. It is a good plan to maintain a reserve for uncollectible accounts at a stated figure, as well as to charge against this reserve such accounts as are deemed worthless or uncollectible and to credit the account annually by a charge against profits with such amount as will restore it to the amount stated. If any of the debts so charged off are afterwards collected, they are credited to the reserve account. The amount reserved to provide against bad and doubtful accounts depends on the class of customers, the kind of business, and the business conditions. A given percentum, from 1 to 5 per cent. of the total amount due from customers, is usually maintained as the reserve or provision for possible bad debts. Sometimes 1 or 2 per cent. of the sales is set aside each year.

This account may be called a guarantee account, since by its means the collection of accounts receivable is assured in advance. The form of ledger account is as shown in Fig. 28.

RESERVE FOR BAD AND DOUBTFUL DEBTS

1913			1913		
Jan. 1 to Dec. 31	Losses charged off during year	$ 5,987.85	Jan. 1	Balance	$ 6,724.90
			Dec. 31	Profit and loss for year	5,450.00
	Balance	6,187.05			
		$12,174.90			$12,174.90
			1914		
			Jan.	Balance	$ 6,187.05

FIG. 28

51. Reserve for depreciation has already been covered under the heading of Depreciation and will therefore be understood without further explanation.

52. It is decidedly advantageous, particularly with companies whose stock is listed on the exchanges and offered for sale to the general public, to maintain a regular rate of dividend. Frequently, if the profits vary from year to year, the surplus over the adopted dividend rate is set aside in prosperous years in a special reserve to enable a continuance of the rate in years in which the profits have shrunk below the requisite sum, which reserve is the **reserve for equalizing dividends.** Of course, if an adequate surplus is maintained from year to year, it serves the same purpose as this reserve and has the tendency of strengthening the position of the company.

53. It is the custom with some companies, especially where their fire risks are scattered, to carry their own insurance. This is especially true with companies whose risks will not be taken by the insurance companies without charging an exorbitant premium. The **insurance reserve** is created by a charge against profit and a credit to the insurance reserve for the amount to be set aside, either the amount that would be charged by insurance companies or less; sometimes it is more, especially during the earlier years of its creation. If the com-

pany does not sustain any serious losses, the reserve should grow to a very large amount in a reasonable term of years so that new appropriations to it may be suspended. On the other hand, if a fire loss occurs during the early years of its existence, it may be entirely wiped out and an additional loss sustained.

RESERVE FOR INSURANCE

Debit With	*Credit With*
All losses sustained from fire, wind, and water, by a credit to the property account; balance representing the credit excess in the reserve.	The annual appropriations for fire protection, by a charge against profit and loss; interest on investment of insurance funds.

FIG. 29

Fig. 29 shows how entries for insurance reserve should be made. Sometimes all or part of the insurance reserve is represented by an investment in outside securities, for which a separate account is opened, as insurance-fund investment, or investments.

54. Reserve for discounts and expenses, as well as other special reserves, are designed to meet anticipated conditions for which provision is desirable.

55. The **reserve for bond redemption** is often compulsory, as the condition of the obligation is that repayment shall be out of profits that shall be set aside for that purpose, by a debit to the profit-and-loss account and a credit to the bond-redemption reserve account. This account is generally collateral to a fund account, the reserve account merely reserving the profits from distribution in the form of dividends; and unless a redemption, or sinking, fund is set aside out of the assets the profits so reserved remain offset among the assets, though without any distinguishing earmarks. In many cases, however, it is required by the terms of the loan that a fund be set aside or placed in the hands of a trustee to meet the bond issue or other indebtedness at maturity. Frequently, the annual deposit to the sinking fund must be made to the trustee even without the creation of a reserve out of profits.

SECRET RESERVES

56. A **secret reserve** is a hidden surplus established by the excessive writing down of assets or by a manipulation of inventories, causing their undervaluation, or by ignoring legitimate increase in their value. It is sometimes used as a cover, or offset, to bad investments or losses to which it is not desired to call attention. This practice is severely censured as an injustice to ordinary stockholders, involving an inaccurate revenue account and balance sheet.

It is claimed that in some cases bank officials have written down the value of the bank premises or have established secret reserves in the form of insurance reserves, as against losses from bad loans or embezzlements. This, however, need not be so severely condemned, because to provide insurance against possible future bad loans or embezzlements seems to be as justifiable as any other form of business insurance. If used, however, to conceal past instances of this kind, it would not be proper. The question is interesting and one in which it is hard to draw an exact line, as the undervaluation of assets is regarded by some as an evidence of commendable conservatism, while it is hotly condemned by others as a trick to escape taxation. This latter objection would be overcome in most cases by carrying the assets at their full valuation and creating a reserve to offset them.

57. Secret reserves are established by (1) omitting assets that should be included, intentionally or inadvertently; (2) undervaluing assets, intentionally or otherwise; (3) writing off too much depreciation; (4) charging addition and improvements to repairs or maintenance account instead of to plant account; (5) creating reserves for bad debts in excess of the amount required; (6) charging production costs to general expense instead of to the manufactured article; (7) including fictitious liabilities in the accounts or overstating liabilities; (8) making additions or improvements and charging the cost to surplus account; (9) neglecting increases in value of property because of surroundings and improved conditions of locality; and

(10) understating values in good years and increasing them in lean years, as a means of keeping the dividends uniform from year to year.

The hidden reserve is undoubtedly a commendable creation, in case it is not carried to excess and provided it is not detrimental to interested persons. The spirit of conservatism is to be commended by the accountant rather than criticized; yet if the stockholders are kept in ignorance of a secret reserve, the accountant should draw attention to the fact in his report, provided it is of sufficient proportions to merit special attention.

SURPLUS

58. Surplus is that which remains over; that is, the overplus, the residue. It consists of the excess of assets over liabilities and capital investment, and is represented as a credit to the surplus or the undivided-profits account. It is designed to meet unforeseen contingencies or to strengthen the financial condition of the company. It may be originally

Subscription	$200,000.00	
To capital stock		$100,000.00
To surplus		100,000.00

FIG. 30

subscribed in addition to capital at the time a company is organized, as shown in Fig. 30, or it may be accumulated out of

Profit and loss	$5,000.00	
To surplus		$5,000.00

FIG. 31

profits with an annual credit, as shown in Fig. 31. It may also consist partly of a direct acquisition of value not belonging to

Real estate	$2,000.00	
To surplus		$2,000.00

Increment of value as per appraisement.

FIG. 32

the fiscal period or to the earnings of the business, and therefore not credited to profit-and-loss account, as shown in Fig. 32.

59. Advantages of Surplus.—The advantages of surplus are as follows:

1. If surplus is unrestricted, it may be used for the payment of dividends.

2. It may be held as reserve for contingencies.

3. It may be considered as additional capitalization (by the provision of additional working capital). A progressive concern is likely to be in need of an enlarging capital, and the wisest and most conservative way of providing for such needs is by the gradual accumulation of surplus, which provides for the necessary increase of working capital and keeps the control of future profits in the hands of the stockholders.

4. It enables the equalization of dividends by providing for the payment of dividends out of surplus in unprofitable business periods.

A fictitious surplus must not be used for distribution in the form of dividends. As an illustration, take a mining company formed with land $999,000, cash $1,000; and capital $1,000,000. The principal stockholders may donate $500,000 in stock to the treasury, and these shares of stock may be sold at a reduction to provide working capital and be credited to such an account. If the entry should be credited to surplus instead of to working capital, this is evidently not a bona-fide surplus, as it is quite likely that the land was not intrinsically worth the $999,000 in the first place, and the payment of dividends out of such a surplus would not be out of earnings, but out of capital.

60. Methods of Handling Surplus on the Books.—In handling the profits and surplus of a business, the dividend may be paid out and charged to the profit-and-loss account and the balance transferred to the surplus, as shown in Fig. 33;

Profit and loss	$37,000.00	
To dividend No. 12		$25,000.00
To surplus		12,000.00

FIG. 33

or, the entire profits of the period may be transferred to surplus account, as shown in Fig. 34, and the dividend charged to surplus, as shown in Fig. 35.

The question of the better way is merely one of fact. If the dividend is ordered paid out of the profits of the year, it

should be charged as shown in Fig. 33, and if, on the other hand, it is ordered paid out of the surplus or undivided profits on hand, the entries should be as shown in Figs. 34 and 35.

Profit and loss	$37,000.00	
To surplus		$37,000.00

FIG. 34

A reference to the resolution of the board of directors will determine the point.

Considerable losses or gains not concerned with the transactions of a fiscal period, and yet occurring therein, should be

Surplus	$25,000.00	
To dividend No. 12		$25,000.00

FIG. 35

charged or credited to surplus account; in this way they will not affect the average profits of comparable periods.

If a large surplus is maintained, it may not be necessary to carry small reserve accounts for bad debts and other contingencies.

61. Investment of Surplus.—Sometimes all or part of the surplus profits of the company is invested in outside securities, such as bonds and stocks of other companies. When this is done the company is in no danger of being without funds in case of a crisis, but it is evident when the low interest rate is considered, that the money thus invested could be used more profitably in the business. A surplus is always represented by an equivalent of assets and of course these assets are not ear-marked or designated. They are simply retained among the assets as part of the working capital of the company, but when it is decided to invest in gilt-edged securities, it is obvious that cash must be withdrawn from the business. In

Securities (or surplus fund)	$10,000.00	
To cash		$10,000.00
For investment of surplus fund in gilt-edged securities, per order of the directors.		

FIG. 36

such a case, it serves as a surplus fund, and the amount expended may be debited to surplus fund or to securities or to some other appropriate account. It should be noted, however, that a

surplus account would stand on the books as a credit, while the surplus fund is an asset and, therefore, a debit account.

Assuming that an investment of $10,000 is made out of surplus, the entry shown in Fig. 36 would result.

The income from the surplus fund invested shall, of course, be debited to the cash account and credited to the income account. In case a business depression arises and the company is in need of funds, it is an easy matter to turn the securities into cash. It is well to remember, however, in order to prevent confusion, that a distinction is made between surplus fund and surplus account. The surplus account is sometimes called *reserve fund*, and other terms are occasionally used for it, as *margin, rest, contingent fund*, etc.

CASH RECORDING

METHODS OF HANDLING CASH

62. The term *cash* as here used is intended to mean money on deposit in a bank, as well as checks and money actually on hand. Of all the various kinds of assets in business, cash is the most important, because of its very nature. It is what passes most readily from one person to another as the equivalent in value of all other kinds of property. For this reason, more care and attention should be given to a full accounting of cash than to other transactions in a business.

63. It is the intention here to make clear the principles of proper accounting for cash and to illustrate these principles by examples that are more or less common to the average business. It should be understood, however, that the application of these principles may be varied according to the requirements of a particular business; for instance, the requirements of a bank with respect to cash make its cash records more complex than the average cash account.

Before discussing the various forms of cash account and their uses, it is necessary to determine the best methods of handling

cash; that is, what should be done with cash received, and how payments should be made.

64. Paying by Check.—The best method of handling cash is to deposit in a bank as soon as possible the identical money received, whether checks or currency, and to make all payments by check. This method is found to be best, because it simplifies the work of keeping the cash account accurately, as is explained later. There are other reasons why it is to be preferred to other methods, but they concern the work of an auditor rather than that of the accountant, and are not discussed here.

65. Fund for Small Expenditures.—It is frequently necessary to provide a fund for making numerous small expenditures, which are common to nearly all lines of business, and which cannot be made by check. Such a fund is known as *petty cash*, to distinguish it from the main cash. Its uses and relation to the main cash are explained more fully later.

66. Common Method of Handling Cash.—In a common method of handling cash, only checks received are deposited in the bank; any currency received is, for the time being, kept in the cash drawer and used, with other currency, to make payments out of the drawer. If such receipts in currency are not sufficient to maintain a balance in the drawer, then a check is drawn on the bank account and cashed at the bank. On the other hand, if the balance in the cash drawer becomes too large, then a round sum is taken out and deposited in the bank. This method is not provided for in this outline because it is thought best to discourage its practice. Though it is less desirable than the method mentioned in Art. **64**, it is persisted in very commonly by business men and bookkeepers, chiefly because it is the survival of an old custom, and any suggestion of a change is looked upon as an introduction of unnecessary "red tape."

CASH ACCOUNTS

67. Bank Account.—The record of money on deposit in bank is a vital part of the cash account. The usual method is to keep a separate record of bank transactions. Deposits when made are entered in the deposit or pass book. Checks are usually printed in book form with a margin on the stub for records. On this stub is entered the balance forwarded; to it is added the deposits made, as entered in the deposit or pass books, and from the total is deducted the aggregate of the checks issued from the opposite page, leaving a balance to be forwarded. An example of such entries is shown in Fig. 37.

Forward		$2,101.98
1913, March 31, Deposit:		
Hare, Green & Company	$197.02	
Brown & Jones	10.76	
Blank Manufacturing Company	210.34	
		418.12
		2,520.10
Checks, No. 891–No. 895 (issued from opposite page)		260.19
Forward (balance per cash book)		2,259.91

FIG. 37

68. Bank Settlement.—It should be a rule in every business to have the bank account settled by the bank at least once a month. When the deposit, or pass, book is left for settlement, the bank enters the total of the deposits made, plus the balance at a previous settlement, and from the total, deducts the checks that have been paid out of the account (the paid checks being returned with the deposit or pass book),

Balance, per check-stub		$2,259.11
Checks Outstanding:		
No. 888, $190.45		
No. 893, 56.19		
No. 894, 75.00		321.64
Balance, per bank		$2,581.55

FIG. 38

the difference being shown as the balance then on deposit. This balance shown by the deposit book does not always agree with that shown on the check-stub, because some checks that have been issued may not have been presented to the bank for

CASH BOOK

1913		RECEIPTS								1913		PAYMENTS							
Date		Account	Explanation	Ledger Page	Discounts and Sales		Accounts Receivable		General	Date		Account	Explanation	Ledger Page	Voucher Number	Discounts on Purchases		Accounts Payable		General
1913										1913									
March	1	Balance							1,540 18	March	1	S. C. Carroll, Cashier	Pay roll, week ended 2/28/13	√	1010			390	20	
	3	D. J. Hess	Invs. 1/10-1/29	√	1	80	90	00			7	D. J. Nichols		√	1020	9	01	180	19	
		Smith & Gray	Invs. 2/8	√		49	48	90			8	Interest	Discount on note to First National Bank	150						23	00
		Good Mfg. Company	Invs. 1/2-1/30-3/1	√	3	04	150	18			10	Hart Manufacturing Company		√	1015	1	80	90	18	
	8	Bills payable	First National Bank, due 6/7, for loan at 6 per cent.	102					1,500 00			Local Telephone Company		√	1018			14	50	
												General Express Company		√	1014			70	80	
	12	A. H. Mason & Company	Invs. 1/9-2/13	√		89	89	26				Wilkins Paper Company		√	1024	1	81	60	23	
		E. F. Corson	Invs. 1/10-1/29-1/31-2/14	√	5	83	291	45			15	S. C. Carroll, Cashier	Pay roll, 2 weeks ended 3/14/13	√	1025			352	81	
	19	Bills receivable	B. K. Mills	12					107 45												
		Interest	B. K. Mills	150					1 07		20	Card Lumber Company		√	1011	3	94	196	87	
		D. J. Polk & Company	Invs. 2/8-2/11	√	1	59	79	40			25	J. M. Hoskins		√	1016			190	45	
	25	Taylor & Lamb	Invs. 10/9/12	√			140	19			29	S. C. Carroll, Cashier	Pay roll, 2 weeks ended 3/28/13	√	1028			379	87	
	29	Interest	On deposits with First National Bank	150					10 08		31	S. C. Carroll, Cashier	Petty cash expenditures for the month	√	1029			87	20	
	31	Hare, Green & Company	Invs. 2/2/8-3/19	√	4	02	201	04				Kelly & James		√	1017	1	85	37	03	
		Brown & Jones	Invs. 3/1	√		22	10	98				Accounts receivable	Refund to Taylor & Lamb for overpayment 3/25/13	25						56	19
		Blank Mfg. Company	Invs. 11/9-11/20-12/18	√			210	34				A. W. Miller	Advance for expenses	32						75	00
					17	88	1,311	74				Jos. Murdock & Brothers		√	1019		13	6	75	
	31	Accounts receivable	Total for the month as above	25					1,311 74							18	54	2,057	08	
	31	Discounts on purchases	Total for the month, as opposite	162					18 54		31	Accounts payable	Total for the month, as above	112						2,057	08
											31	Discounts on sales	Total for the month, as opposite	167						17	88
												Total payments								2,229	15
											31	Balance—Safe National Bank								2,259	91
									4,489 06											4,489	06

FIG. 39

NOTE.—Accounts-receivable and accounts-payable columns show the aggregate amounts to be posted to the personal accounts. The total of each discount column is entered on the reverse side of the cash book and posted from there to the ledger. This plan is not always followed. Some cash books have a net cash column on each side showing net amounts paid to and by persons. The discount columns may then be posted directly from the side where they belong, instead of being reversed.

payment when settlement was made. A reconciliation of the two balances should be entered on the check-stub in a form similar to that shown in Fig. 38.

69. Several Bank Accounts.—If money is kept on deposit in more than one bank, the method is the same as that just explained, except that a separate account is kept on the check-stub of each bank, and each bank account is settled independently of the others, although at the same time.

70. Relation of Bank Account to Cash.—When the records of cash in bank are kept according to the methods just outlined, it is only necessary to copy the details from the check-stub into the cash book, assuming, of course, that all money received has been deposited in the bank. In the cash book are also made entries (which do not appear on the check-stub) to show the amount of discount allowed on sales or taken on purchases. At the end of each month the entries in the cash book are proved to be correct by the agreement of the cash-book balance with the balance in the bank, as shown by the check-stub. The name of the bank (or banks) should be written after the balance, at the end of each month, to indicate clearly the nature and location of the balance.

71. Cash-Book Form.—Fig. 39 illustrates a cash book kept according to the methods just outlined; that is, all the cash received was deposited in bank and so entered in the deposit book and on the check-stub; all the payments were made by check, as appeared from the entries on the check-stub; and the balance on hand agrees with the bank deposit book after settlement and after adjusting the balance for outstanding checks, as illustrated in Fig. 38, from the check-stub memorandum.

If more than one bank account had been kept, the cash balance would have been shown as made up of balances in the several banks, each of which would agree with the respective check-stubs, and deposit books after proper adjustments for outstanding checks.

A blank column has been inserted on the side for cash receipts. This may be found convenient in some cases for a class of receipts that occur frequently, such as cash sales, and that may be posted in monthly totals instead of daily.

No provision has been made on the side for payments to show the distribution of charges to various operating and expense accounts. Some cash books are made unnecessarily burdensome by the use of numerous columns for making direct charges to operating and expense accounts, but the practice is not a good one. Such distribution is provided for in the system outlined for recording purchases and expenses in the voucher record, or purchases and expenses book.

72. Use of Checks Without Stubs.—There is another method of using checks that results in a great saving of time over the method of check-stub entries. The checks, instead of being in book form, are done up into pads without any stub. Whenever a check is issued, it is entered immediately in the cash book, and no further entry from stub to cash book is necessary. Similarly, cash received is entered in the cash book at the same time it is deposited, and the details thereof are indicated. In other words, all the entries that, by the former method, were entered on the check-stub, are, by this latter method, entered once and for all in the cash book. The reconciliation of the bank balance is shown in the cash book itself, instead of on a check-stub.

73. Cash Book With Bank Columns.—Fig. 40 illustrates a cash book kept according to the method of using checks in pads and without the use of check-stub entries. It is to be noticed that this is the same as the cash book shown in Fig. 39, except that two columns have been added for the bank accounts. The form admits of the addition of as many more columns as there may be more accounts kept with banks.

The agreement of the cash-book balance with the bank accounts (and the latter with the bank settlements) is readily seen from the "balance" entries which show details that would have to be entered on the check-stub in connection with the use of the cash book shown in Fig. 39. If it is found necessary

CASH BOOK

Cash Receipts

1913 Date	Account	Explanation	Discounts on Sales	Accounts Receivable	Ledger Page	General	Safe National Bank	Town Trust Company
1913 March 1	Balance					1,540 18	1,120 95	419 23
3	D. J. Hess	Invs. 1/10-1/29	1 80	90 00	√			
	Smith & Gray	Invs. 2/8	49	48 90	√			
	Good Mfg. Company	Invs. 1/2-1/30-3/1	3 04	150 18	√			283 75
8	Bills payable	First National Bank, due 6/7, for loan at 6 pct.			102	1,500 00	1,477 00	
12	A. H. Mason & Company	Invs. 1/9-2/13	89	89 26	√			
	E. F. Corson	Invs. 1/10-1/29-1/31-2/14	5 83	291 45	√			373 99
19	Bills receivable	B. K. Mills			12	107 45		
	Interest	B. K. Mills			150	1 07	108 52	
	D. J. Polk & Company	Invs. 2/8-2/11	1 59	79 40	√			77 81
25	Taylor & Lamb	Invs. 10/9/12		140 19	√			140 19
29	Interest	On deposits with First National Bank			150	10 08	10 08	
31	Hare, Green & Company	Invs. 2/8-3/19	4 02	201 04	√			
	Brown & Jones	Invs. 3/1	22	10 98	√			
	Blank Mfg. Company	Invs. 11/19-11/20-12/18		210 34	√		418 12	
			17 88	1,311 74				
31	Accounts receivable	Total for the month, as above			25	1,311 74		
31	Discounts on purchases	Total for the month, as opposite			162	18 54		
31	Cash, Safe National Bank	Transfer of funds						250 00
						4,489 06	3,134 67	1,544 97

Cash Payments

1913 Date	Account	Explanation	Voucher Check	Discounts on Purchases	Accounts Payable	Ledger Page	General	Safe National Bank	Town Trust Company
1913 March 1	S. C. Carroll, Cashier	Pay roll, week ended 2/28/13	1010		390 20	√			390 20
7	D. J. Nichols		1020	9 01	180 19	√		171 18	
8	Interest	Discount on note to First National Bank				150	23 00		
10	Hart Mfg. Company		1015	1 80	90 18	√		88 38	
	Local Telephone Company		1018		14 50	√		14 50	
	General Express Company		1014		70 80	√		70 80	
	Wilkins Paper Company		1024	1 81	60 23	√		58 42	
15	S. C. Carroll, Cashier	Pay roll, 2 weeks ended 3/14	1025		352 81	√			352 81
20	Card Lumber Company		1011	3 94	196 87	√		192 93	
25	J. M. Hoskins		1016		190 45	√		190 45	
29	S. C. Carroll, Cashier	Pay roll, 2 weeks ended 3/28	1028		379 87	√			379 87
31	S. C. Carroll, Cashier	Petty cash expenditures for the month	1029		87 20	√			87 20
	Kelly & James		1017	1 85	37 03	√		35 18	
	Accounts receivable	Refund to Taylor & Lamb for overpayments, 3/25/13	1030			25	56 19	56 19	
	A. W. Miller	Advance for expenses	1031			32	75 00	75 00	
	Jos. Murdock & Brother		1019	13	6 75	√		6 62	
				18 54	2,057 08				
31	Accounts payable	Total for the month as above				112	2,057 08		
31	Discounts on sales	Total for the month, as opposite				167	17 88		
	Cash, Town Trust Co.	Transfer of funds	1032					250 00	
							2,229 15	1,209 65	1,210 08
	Balance:								
	Safe National Bank:	Pass Book			2,246 66				
	Checks out:	No. 912		190 45					
		No. 1137		56 19					
		No. 1138		75 00	321 64				
					1,925 02			1,925 02	
	Town Trust Co., per Pass Book				334 89		2,259 91		334 89
							4,489 06	3,134 67	1,544 97

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Fig. 40

to prove the cash-book balance before the end of a month, the footings of the various columns can be entered in pencil, and a temporary memorandum of the agreement made on loose paper.

It may sometimes happen that cash would be received on the last day of the month that could not be deposited until the next day. In such a case, the balance on hand would be shown as made up of so much for cash and checks, as well as balances in bank.

74. Cash Entries.—In making cash-book entries, the following general rules should be observed:

Show balances on hand at the first and at the end of each month in red ink, so that they may be readily distinguished as balances.

Always enter details that must be used to explain, but do not use unnecessary words or repetitions. For instance, it is well to indicate dates of invoices for which money is received, or date of note, when due, etc., covering a loan from a bank or a note received from a customer. On the other hand, it is a waste of time to use and repeat the words *To* and *By* or to insert the words *Amount received from* or *Amount paid to* when the general nature of the entries is already indicated by the headings of each side of the cash book.

Enter the year at the head of the date column on each page, and the month and the day underneath.

After the date of each entry, enter the name of the ledger account affected first and then follow with the details. The name of the party in whose favor checks are drawn should always appear in the cash book, so that checks may be readily identified with the cash entries.

In case discounts are allowed in settlement, show the gross amount of the invoices settled for in one column and the discount in another, so that both discount and cash received can be posted in one account from the cash book to the ledger. Some prefer to make separate entries for cash and discounts. At the end of the month, the total discounts allowed are entered on the payment side, and total discounts taken are entered on the receipt side.

Make entries as soon as possible after transactions have actually occurred in the place where it is intended that the original entry should remain permanent. Some make rough memoranda in a book called a *blotter*, or *scratcher*, and afterward transcribe to the cash book, but such practice is a waste of time and a source of confusion and error.

75. Cash Postings.—In posting, it should be remembered that the cash account itself is a ledger account, although, for convenience, it is not kept in the ledger. Being at the same time a book of original entry, only one posting for each set of debits and credits is necessary, and that is the opposite of the entries in the cash book. In other words, every debit in the cash book (receipt) should be posted to the credit of some account in the ledger, and every credit in the cash book (payment) should be posted to the debit of some account in the ledger.

The total of the accounts-receivable column is posted at the end of the month to the ledger account of the same name. The details are posted to the credit of each customer's account in a separate ledger. Similarly, the total of the accounts-payable column is posted to a ledger account and the details are entered in a purchases and expenses book or a voucher record. These ledger accounts are known as *controlling accounts*, because they include in total all the entries that affect any of the customers' accounts, or accounts of those from whom purchases are made. The relation of these controlling accounts to the detailed accounts, and the methods of keeping them in agreement have already been explained.

76. Petty Cash.—Two methods of providing for small payments in currency are recognized as good practice; these are as follows:

First Method.—At the outset, there is drawn from the bank a round sum that will be large enough to last a month and that is charged in the ledger to a petty-cash account. A record of payments out of this fund is kept on printed statements, as shown in Fig. 41, and at the end of each month, a check is drawn on the bank covering the total of all payments during

Date		Explanation	Received	Paid	Office Expenses	Postage	Freight and Express	Traveling	Miscellaneous Account	Amount
1913										
March	1	From Cashier	$100 00							
	1	L. R. Warren, Postmaster		$10 00		$10 00				
		N. C. R. R.		6 88			$ 6 88			
		R. M. Wallace		3 65				$3 65		
		Car fares		60				60		
	3	Model Towel Supply Company		1 25	$1 25				Factory	
		D. R. Toomey, haulage labor		2 75					expenses	$ 2 75
	7	American Express Company		3 25			3 25			
		Brilliant Electric Light Company		1 50	1 50					
	8	Postage due		06		06				
		Car fares		45				45	Factory	
	10	N. C. R. R. Co.		6 77			4 25		expenses	2 52
	12	Cold Spring Water Company		3 00	3 00					
	15	L. R. Warren, Postmaster		10 00		10 00				
	19	N. C. R. R. Co.		13 10	25		12 85			
		Car fares		75				75		
	20	Employes Aid Society		5 00					General	
									expenses	5 00
	25	N. C. R. R. Co.		4 69			4 69			
		Adams & Watson		60	60					
	29	American Express Company		4 35			4 35			
		Car fares		55				55		
	31	L. R. Warren, Postmaster		8 00		8 00				
		Total (deduct)	$ 87 20	$87 20	$6 60	$28 06	$36 27	$6 00		$10 27
	31	Balance	12 80							
	31	From cashier	87 20							

FIG. 41

the month. This check is charged out of the cash account, like any other check. When the check is cashed, the fund is restored to the amount originally drawn, and shown as a balance in the petty-cash account in the ledger. The distribution of the charges covering petty-cash payments is made through the purchases and expenses book or voucher record. The petty-cash balance should be verified frequently. The currency on hand and the vouchers or other memoranda of payments for the current month should agree with the round sum shown by the ledger account.

Second Method.—Another method of providing for payments in currency is to draw funds from bank by check whenever the balance of currency on hand becomes low. Such checks are entered in the cash book, like any other check, and are charged in the ledger to the petty-cash account. At the end of each month, credit is given through the journal for all payments made during the month, various accounts being charged with the distribution shown on the petty cash, as is illustrated in Fig. 41. This method is not illustrated fully, but the form shown in Fig. 41, bound in book form, may be used for the purpose, by entering as received the amounts drawn from the bank at various times. The balance shown by the petty-cash book should then agree with the balance in the petty-cash account in the ledger, and should be verified frequently by seeing that the currency on hand is the same as the petty-cash balance.

No matter which of the two methods just mentioned is used, it should be a practice not to carry as cash from time to time any memoranda of payments, which are not entered as payments, on the ground that they are temporary and will be made good later. A possible exception to this rule is the case of wages paid to discharged employes. It is often necessary to advance such wages out of petty cash, and retain a memoranda thereof, until the regular pay roll is made up. All wages are included in the pay roll, and cash drawn from the total, out of which the advances from petty cash, such as small loans until pay day, advances for fares for short trips by employes, etc., are made good.

77. Cash Control.—The foregoing outline has to do principally with the proper methods of handling and recording cash received and paid out. No system for cash, however, is complete unless it comprehends some means of insuring that all cash earned or due has been actually received (as well as recorded) and that none of the cash payments are not a proper charge against the business. In all systems of cash control, there are three principles that are more or less commonly applied. These are as follows:

1. The custody of cash and the records of actual receipt and payment are assigned to one person or one department, to be directly responsible to the proprietors.

2. To another person, or department, is assigned the duty of actually executing transfers of property other than cash, for which payment in cash is anticipated, and making a complete record of such transfers.

3. An impartial and competent review of the results of each of the preceding duties to insure proper harmony between them.

78. Examples from actual business practice, illustrating these principles, are as follows:

In a department store, by the use of duplicate sales slips, a record of every sale is sent with cash to the cashier and a record accompanies goods to be wrapped and is retained there; also, the work of both departments is established as correct by the routine work of the auditing or accounting department.

In some department stores, the work of all three departments is combined in the work of the salesperson, by the use of a mechanical cash register. The cash registrations in total are, in turn, only accessible to the auditing or accounting department.

Similar principles are applied in the use of fare registers on street cars. The conductors' returns are made directly to the treasury, the register readings are taken regularly and reported to the auditor, and the auditor establishes their agreement with the treasurer's returns to him.

ELEMENTS OF COST ACCOUNTING

MANUFACTURING COST

ONE LINE OF GOODS

1. The finding of the cost of manufacturing a product is called **cost accounting** and is an important part of a bookkeeper's work. The following explanations and illustrations cover the principles of the work and the method to be followed when a system of cost accounting is to be introduced into a going business.

In many business houses no attempt is made to ascertain the loss or gain until the end of the business year. This is not a good plan, as no business man can afford to wait a year to know the condition of his affairs. By the following plan a fairly accurate perpetual inventory will he had and the loss or gain for any period can easily be obtained. While a period of any length may be used, it will be found best, for purposes of comparison, to have the periods of the same length; therefore, one of 4 weeks is frequently adopted, which gives thirteen periods to a year.

While a detailed explanation of each Ledger account is given later, it is thought best to give here a short summary of the method to be followed in closing a going set of books, adapting them for showing the gain or loss every 4 weeks, and finding the gain or loss at the end of such a period. The books explained show a profit.

2. The closing of a going set of books preparatory to keeping them by the 4-weeks-period method must be done in

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a slightly different manner than after such method is adopted. A trial balance and inventories must first be had, then the inventories should be entered in red ink on the respective accounts, resources on the credit side and liabilities on the debit side. To find the gross gain, Manufacturing account is charged through the Journal with the balances of Taxes, Insurance, Raw Material, Supplies, Labor, Fuel, Salaries, and General Expense accounts, and through the Impairment and Betterment account with the amount to be charged off for depreciation on plant, each of which is credited. Goods, Consignment, and Waste accounts are debited and Manufacturing account credited for their balances. Manufacturing account is then debited and Loss and Gain credited with the gross gain. The net or true gain for the period is then found by debiting Rent and crediting Loss and Gain for the gain on rent, and Loss and Gain is debited and Cash Discount, Bad Debts, and Interest credited for the losses on these accounts. When the entries have been posted, the accounts ruled, and the inventories brought down, the books are in shape to be kept by the 4-weeks-period method.

At the end of each 4 weeks-period a trial balance shows the condition of each account, the balances of the Raw Material and Supplies accounts show the value of these on hand, and the credit side of these accounts the amount and cost value of them used during the period, and the Goods record the daily and total production of goods for the period. No actual inventories are taken. A computation is then made to find the total cost and the cost per pound of the production.

To the cost value of the raw material, supplies, and fuel used is added the amount paid out for labor, general expense, and salaries, and one-thirteenth of the known or estimated cost for the year for insurance, taxes, and depreciation. The sum of these is the total manufacturing cost for the period, which divided by the pounds produced gives the cost per pound. With this information the value of the finished product on hand and the cost of the goods sent on consignment are easily found and the books closed. The inventories of Raw Material, Supplies, Fuel, the estimated value of

the Waste on hand, Goods in Process, and the known value, at cost, of the finished product on hand and out on consignment should be entered in red ink on the credit side of their respective accounts. Entries should now be made debiting Manufacturing account for the total cost for the period and crediting Raw Material, Supplies, Labor, Fuel, Insurance, Taxes, General Expense, Salaries, and Impairment and Betterment for the items composing the total cost; debiting Goods and crediting Manufacturing for the total cost; debiting Consignment and crediting Goods for the cost value of the goods sent out on consignment; debiting Rent and crediting Tenant Property Taxes and Insurance for one-thirteenth of the estimated cost for the year for taxes and insurance; debiting Rent and crediting Tenant Property Impairment and Betterment for one-thirteenth of the yearly allowance for depreciation; debiting Rent, Goods, Consignment, and Waste and crediting Four-Weeks' Loss and Gain for the gain now shown by these accounts; debiting Loss and Gain and crediting Cash Discount, Interest, Goods in Process, Bad Debts, and Salesman for the losses now shown by these accounts. The balance of the Four-Weeks' Loss and Gain account now shows the net gain for the period; this is transferred to Loss and Gain account by debiting Four-Weeks' Loss and Gain account and crediting Loss and Gain.

LEDGER ACCOUNTS

3. No particular form of Ledger is necessary for this method of finding manufacturing cost, but a loose-leaf Ledger in the ruling shown is a convenient form.

4. The charges that go to make up the manufacturing cost for a given period are collected by Journal entries into the **Manufacturing** account. Raw Material, Supplies, and Fuel are credited for the cost of the items used; Salaries, Labor, and General Expense for the amount paid out for them during the period; Insurance and Taxes for the pro rata cost; and depreciation, through the Impairment and Betterment account, for the amount written off as a reserve for

the reproduction of the plant. The total of these credits is debited to Manufacturing and shows the manufacturing cost of the products.

5. The record of the cost of material from which the goods are made, such as wheat, wool, cotton, etc., is kept in an account called **Raw Material.** This is debited with all purchases, including freight. It is credited at the end of the time period at the cost plus freight with all the material consumed in the manufacture of goods. The difference between the sides of the account when thus kept will show the cost value of the material on hand, and in this way may be used as a perpetual inventory. Such an inventory, however, should be checked by the taking of an actual inventory annually or semiannually.

In order to know how much material is used in the production of goods, all material, supplies, etc. should be in charge of a storekeeper and delivered to the factory departments only on receipted orders. From these orders, at the end of the time period, is taken the amount that is credited to Raw Material, Supplies, etc. and debited to the Manufacturing account.

As an aid in figuring the cost of material called for by the orders, what is known as the decimal method is often adopted. This method is the ascertainment of the original cost of ten pieces or pounds of material plus freight and then compiling tables in multiples of the cost so that the value of the material called for by any order can be seen at a glance.

When a cash discount is allowed and taken off of material purchased, there are two general methods of handling it: one to debit the Material account with the full amount of the invoice and credit merchandise discount; when the books are closed the merchandise discount account is closed to the credit of the Raw Material account or direct to Loss and Gain account. The other method, and one that is rapidly growing in favor, is to debit the Material account with the net amount of the invoice, thus saving much unnecessary work. The result is the same.

6. The **Supplies** account is debited with the cost of all purchases, plus inward freight, and credited at cost price plus freight at the end of the time period with the value of the supplies used. The difference between the debit and credit shows the value of the goods on hand; this difference is used as an inventory.

7. The **Labor** account is charged with the total amount paid for direct labor on the goods produced. The total debit to this account for the time period is charged to Manufacturing account.

8. The **Fuel** account is debited with the amount paid for fuel of all kinds, including freight. Expenses for lubricants are generally included in this account. Should it happen that any sales of fuel, etc. are made, then the account should be credited. The debit balance less the inventory is charged to Manufacturing account at the end of the time period.

9. The **Insurance** account is debited with the amount paid for insurance premiums as they become due. The cost for insurance for any time period should be a part of the manufacturing cost of the goods made during that period. If a time period of 4 weeks is used and the total insurance premium for a year is paid in advance, then one-thirteenth of this premium should be debited to Manufacturing account and credited to Insurance at the end of each 4 weeks. If, however, the premiums are not paid in advance for a year, then the amount should be estimated and one-thirteenth charged and credited as above and an adjustment made at the end of the last period.

10. When taxes are paid in advance the **Taxes** account should be treated the same as the Insurance account. When not paid in advance, the estimated pro rata expense for the period should be considered when figuring the manufacturing cost for a stated time.

11. There are always small payments for incidentals like stamps, telegrams, etc., for which it is not desired to

keep separate accounts and yet which are not chargeable to Supplies; these are charged to **General Expense** account and considered as a part of the manufacturing cost for the period in which they were paid out.

12. The salaries of officers and clerks connected with the manufacturing part of a business are a charge against the cost of the manufactured product, but as this expense is not directly productive labor a separate account called **Salaries** account is kept for it. The debit of this account should be charged to Manufacturing account at the end of each time period.

The Salary column in the Cash Book should contain all payments made on account of these items. If care be taken to see that all salaries of officers are paid at the end of each 4 weeks, one-thirteenth of the yearly amount, the total of this column can be carried direct to the Manufacturing account; otherwise, if payments are made by the calendar month, one-twelfth of the yearly amount, carry the total of the special column, whatever it may be at the end of the time period, to the Ledger account as above, but carry only one-thirteenth of the yearly amount to Manufacturing account. The difference will show liability. The account will balance at the end of the year.

If part of the time of those drawing salaries is devoted to other duties than those connected with the manufacturing of the goods, then that time should not be charged against the cost of manufacture but against the department for which the work was done, as advertising, selling, etc., from which it will be carried to the Four-Weeks' Loss and Gain account to be accounted for in producing the true loss or gain.

13. The wearing out and the lessened value of machinery, buildings, etc. should be taken into account in the manufacturing cost of goods and not left to be accounted for in a lump sum at some future time. As the items on which there is a depreciation are constantly carried in the Plant account at cost, the pro rata depreciation for the time period should be credited to **Impairment and Betterment**

No. 45

Name Plant.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1			99800 —
Mill Rates			2200 —		107250 —
Jan. 15	J.	3		750 —	
	C.B.	4		200 —	
Buildings,			23000 —		
Machinery,			63000 —		
Jan. 15	J.	3	14000 —		
				5600 —	
Power Plant,			10000 —		
Tools & Fixtures,			500 —		
Office Furniture,			800 —		
Horses & Wagons,			300 —		

FIG. 1

account and charged to Manufacturing account at the end of the time period.

The following percentages of depreciation during a year are in quite general use: Mill site, 0 per cent.; buildings, 3 per cent.; machinery, 10 per cent.; power plant, 7 per cent.; tools and fixtures, 15 per cent.; office furniture, 10 per cent.; horses and wagons, 25 per cent.

14. The **Plant** account includes the subdivisions into which a manufacturing plant is usually divided. Some bookkeepers prefer to have a separate account for each division. The changes in these accounts are so few, however, that an arrangement as shown in Fig. 1 answers the purpose and brings the sum of the divisions into the trial balance under one head, while the detail of the divisions is sufficient to be of value as a check record on the itemized inventory of each, which should always be kept, not only for the information it affords at all times but also because of its special value in settling insurance claims in case of a serious fire. In this account all items are carried at cost indefinitely, and all records of repairs, depreciation, etc. are made in the Impairment and Betterment account. Whenever items are purchased or sold, the necessary entries affecting the subdivisions of the accounts are made in the Journal and posted, as illustrated in the Model Set by those entries affecting mill site and machinery accounts.

15. Any expense for a new building that will be a permanent improvement and increase the asset value of a plant should be charged through the Cash Book to a **New Building** account. When the building is completed the account will be handled as the other items of the Plant account.

16. Many manufacturing concerns operate tenant property, on which it is desirable to have monthly gain or loss report. It has no bearing on manufacturing cost and therefore the account should be kept separate from the Plant account. The **Tenant Property** account is debited with the cost of the property bought or built. Accounts are opened with Tenant Property Impairment and Betterment, Tenant

Property Taxes and Insurance, and Rent, through which accounts are handled the depreciation, expense, and income items for the property.

17. All payments for keeping up tenant property should be debited to **Tenant Property Impairment and Betterment** account. The amount charged off for depreciation should be credited to this account and debited to Rent. The difference will show the amount held for betterment.

If the workmen are furnished the houses free of rent, a corresponding decrease of wages being made on this account, then the expense of keeping up tenant property becomes rightfully a charge against manufacture, and Manufacturing account should be debited.

18. The taxes and insurance on tenant property are treated in a **Tenant Property Taxes and Insurance** account the same as these items for Plant account are treated in Taxes and Insurance accounts.

19. The depreciation on tenant property is debited to **Rent** account, which is credited with the rental money received. The difference in the account will represent the true gain during a time period. If the rent is due and unpaid, to arrive at the true gain, the unpaid rent is handled as an inventory. The account is closed to the Four-Weeks' Loss and Gain account.

20. The **Goods** account is the same as a merchandise sales account and is credited from the Sales Book and Cash Book with all direct sales of goods. At the end of each period it is debited and Manufacturing account credited for the cost of the goods produced. A record of the quantity produced being kept, the cost per pound, or other unit, is easily found. It is then credited and Consignment account debited at cost price with all goods sent out on consignment, the quantity of such goods having been entered in the Sales Book as they were sent out and posted to the Ledger.

The manufacturing cost per pound and the quantity produced being known and a record having been kept of the

quantity of goods sold, the quantity on hand can be easily found without actually taking an inventory. This quantity multiplied by the cost per pound gives the value of the inventory.

When a cost-accounting system is installed in a going business the Goods account must be debited with the inventory of the goods on hand. If this inventory is taken at cost price, the result shown by this account at the end of the period will be correct, but if the inventory is taken, as will most likely be the case, at a higher valuation than cost price, then, to have the account show the true result for the period, this advance of the inventory valuation over the true cost of the goods must be adjusted before any entries for the period are made. This is best done by making a conservative revaluation of the goods and then charging Loss and Gain account with the difference in inventories, thus leaving Goods account charged with the true valuation of the goods on hand at the beginning of the period and returning to the debit side of Loss and Gain account the enhanced value given in the first inventory.

21. A certain amount of raw material is necessary to fill the mill, and as it is in various stages of development into finished product it is generally taken as a separate item of inventory. The exactness of this inventory depends on good judgment. If, however, material orders, workmen's time tickets, and assembling cards are used, an accurate record of the value of these goods may be had. Instead of keeping the partly prepared material in the Raw Material or the Goods account, a **Goods in Process** account is used. This is debited with the inventory at the end of each period. Any difference in the inventories is a gain or loss, which is handled by closing the account to the Four-Weeks' Loss and Gain account.

22. In all factories there is more or less waste of partly worked material. As the cost of all material taken from the stock room is considered when figuring the cost of this product, the waste affects the Manufacturing account only by

lessening the amount produced and thus increasing the cost. Therefore, if this waste is saved and later sold, the amount received is a gain and is credited to the **Waste** account, which is closed to the Four-Weeks' Loss and Gain account.

23. It will sometimes happen that goods are returned and credit must be given to the customer. Returned goods may be charged to **Goods Returned and Rebate** account and when sold again credited to that account. Any gain or loss arising from the reselling of goods returned should be handled through the Loss and Gain account for the period in which the goods are sold. Returned goods thus handled must be kept separate from the regular stock, and as this is often found difficult, some houses make a reverse entry, debiting Goods and crediting the customer, thus throwing the goods back into the Goods account, where they are carried at cost until sold again.

Claims for rebate or deductions made by customers when paying bills are a charge against the Loss and Gain account and should be treated as cash discount and handled through the Cash Book.

24. **Interest** account is debited at the end of the time period with the amount paid out and credited with the amount received.

In arriving at the true cost of production, it is supposed that the value of the manufacturing plant has been paid in, also that sufficient working capital is available. If the money has to be borrowed and interest paid, this is not, strictly speaking, a charge against manufacturing cost, but a diminution of the Gain account. If a customer's account is overdue and interest is collected in the final settlement, this is a direct gain, not a matter to lessen manufacturing cost. Therefore, all interest, whether incoming or outgoing, is to be considered from the point of loss and gain, and the Cash Book is provided with Interest columns on both sides to receive these entries.

25. Losses from bad debts cannot be ascertained in advance, and to properly prorate them over various periods

requires that an estimate be made of the probable amount based on past experience. If experience has shown that bad debts amount to an average of 2 per cent. of the sales, Four-Weeks' Loss and Gain is charged at the end of each time period with 2 per cent. of the total amount of the sales charged during that time period and **Bad Debts** account credited with a similar amount. When losses occur from bad debts, Bad Debts account is debited with the amount and the individual account credited. The credit balance of the Bad Debts account is carried on the books as a liability to meet future losses.

26. It is a question whether expenses for salesmen and advertising should be included in the manufacturing cost or whether they should be carried to the Four-Weeks' Loss and Gain account. The weight of opinion favors the latter method.

When the expenses of traveling salesmen are to be paid, an account is kept of the amounts paid to each salesman as shown in the Cash Book of the Model Set by the account of C. N. Wilson. The Ledger account of **C. N. Wilson, Salesman,** is charged with the total at the end of the time period. It is credited and Four-Weeks' Loss and Gain debited through the Journal with these expenses and one-thirteenth of the annual salary. When the salary is paid, it is charged to this account.

27. When goods are shipped to be sold on commission they should be charged at cost price to **Consignment** account. The explanation column in the Ledger account should show the quantity in each shipment, and if the cost price is known the value should be extended into the money column. If the goods have been made in the period during which they were sold, then only their quantity can be charged to this account through the Sales Book until the end of the period, when the cost can be found and a Journal entry made crediting Goods and debiting Consignment for the total amount so shipped during the period. The account is credited with the net receipts for goods, the commission

merchant sending with each remittance a statement showing the quantity sold. If any remain unsold in the hands of the commission merchant at the end of the time period, the inventory is entered at cost. The difference in the account will be the gain, which should be carried to the Four-Weeks' Loss and Gain account.

28. At the end of each period the **Four-Weeks' Loss and Gain** account is debited or credited through the Journal with the loss or gain as shown by the Goods, Consignment, Goods in Process, Waste, Rent, Cash Discount, Interest, Bad Debts, Salesman's accounts, etc. The account is closed to the Loss and Gain account.

29. The **Loss and Gain** account is debited or credited at the end of each time period with the balance of the Four-Weeks' Loss and Gain account. The balance shows the net gain or loss for the several periods between the declaring of dividends. This account is debited with each dividend as declared, and the remainder at each dividend period is carried to the Undivided Profits account and held for future use.

30. The **Dividend** account is credited through the Journal with the amount of the profits set apart to be divided among the stockholders, and debited through the Cash Book when the amount is paid out.

31. The **Undivided Profits** account is sometimes called Reserve account, and, frequently, Surplus account. In it is kept a record of the gain made but not used in dividends. These undivided profits are not usually carried in cash, but form a part of the resources of the business. They may be kept in the business indefinitely or may be divided through cash or stock dividends. A part of them is often used to make up a dividend of the usual percentage when the profits of a period or periods between dividends have not in themselves been sufficient to pay such a dividend.

CASH BOOK

32. The **Cash Book** as here used is the most important book in the series and reduces the bookkeeping work to a minimum. The debit side of the Cash Book is provided with a Sundries column for all accounts requiring separate posting, the individual items going to the credit side of the accounts in the Ledger. It also has columns for Cash Discount, Cash Sales, Interest, Cash Balance, and Bank Deposit. The totals of the Sundries, Cash Sales, and Interest columns, less the Cash Discount, show the amount of cash received. When a page is filled, all the columns are footed and the footings carried forward until the end of the time period.

The credit side of the Cash Book has a column for cash payments, another for check payments, special columns that agree with all the main accounts in the Ledger, a Sundries column for accounts that require separate posting, and several blank columns for special accounts.

The cash and check payments are first entered in their respective columns and then extended and distributed to the special columns. If, when paying employes, rent for tenement property is withheld, the amount should not be deducted from the pay-roll check, but two checks should be drawn, one for the amount of the rent and the other for the balance of the pay roll; both checks should be charged to Labor account. The check for the rent withheld should then be entered on the debit side of the Cash Book as a cash receipt to the credit of rent, and deposited.

Freight on raw material, supplies, new building, etc. should be included in their cost, and such items should be extended into the proper columns. If, when settling bills, customers are allowed to deduct the cost of freight, such deductions should be considered as cash discounts and handled through that account. Outward freight payments should be extended into the column headed Int. Com. Outw'd Frt.

The cash balance is found at any time by adding together the former cash balance, the receipts as shown by the Sundries, Cash Sales, and Interest columns, and deducting the

sum of the Cash Discount, Cash Payments, and Amount of Check columns. The bank balance is found by deducting the sum of the checks drawn from the total of the Bank Deposit column. The balance of currency on hand and the bank balance may be entered in red ink in the Cash Payments and Amount of Check columns as often as desired.

The Cash Book is not balanced and ruled until the end of the time period, when the totals of the special columns are posted to the Ledger accounts that they represent.

SALES BOOK

33. No special form of ruling is necessary for the **Sales Book.** Any bound book, loose leaf, press copy, carbon copy, or sales-order sheet may be used. As it is necessary to know the quantity of goods sold that have been made during the current period, some method must be adopted that will show this, as, for instance, using one money column for such sales and another for all other sales. The quantities sold for cash may be entered in memoranda form in the Sales Book or in the Cash Book as an explanation to the entry. The total of the sales is credited to Goods account.

TWO OR MORE LINES OF GOODS

34. The general books and accounts of a company producing two or more lines or grades of goods, as in a woolen or cotton mill, or several separate jobs, as in a printing office, may be kept the same as when but one line is made, but additional records must be kept to show the cost of each line or job. These records comprise material-and-supplies records, work orders, material-and-supplies requisitions, time tickets, and an assembling card on which the records of material, supplies, and labor for each job are collected. The material, supplies, and labor are the direct charges of manufacturing, and with a proper system of records their cost can be easily and accurately ascertained.

WORK ORDER

January 4, 190__

Name Warren Furniture Co. Job No. 111

Address 12 Winter St. City No. Copies 3000

Title Booklet—New Styles

Job wanted January 13.

COMPOSING ROOM

Pages 12 Leaves 6 Insert ——— Cover Yes

Page reads

Size of leaf 6¼ x 9½ ~~Trimmed~~ Untrimmed

Size of sheet 25 x 38

No. of forms 1 Electros

Job delivered to Press Room Jan 7.

PRESS ROOM

Color of Ink Black.

STOCK

Size	Weight	Name	Reams	Quires
25X38	70#	Super White,	6	2
22X28	70#	Royal Mellton,	1	4½

Req. No. 75 Signed by Robert Buchanon.

Job delivered to bindery Jan 9. Job finished

BINDERY

Numbering

Binding Saddle-wire Stitched.

Ruling Tablets

Folding Yes. Corners

Stitching Perforating

Remarks

Job finished Jan 12.

FIG. 2

The indirect charges against a line of goods or job of work are the proper proportion of the total expense for miscellaneous work, supplies, fuel, insurance, taxes, general expense, salaries, and impairment and betterment. A good method of determining the proper proportion is explained in Art. **41.**

NUMBERS INDICATING CONDITION OF WORK

1. Received
2. On Case
3. Proof, first reading
4. Correcting
5. Revising by Proof Readers
6. Proof, second
7. Alterations
8. Making up into pages
9. Revision and last reading
10. Proof, third
11. Ready for Electrotyping
12. Sent to Foundry
13. Returned from Foundry
14. Ready for Imposition
15. Revising by Proof Readers
16. Ready for Press
17. On Press
18. In Bindery
19. Waiting
20. Delivered

FIG. 3

As a basis of illustration of the use of the blanks just mentioned, the business of a printing office is taken, though the principles of the method are adapted to any business.

35. When an order has been received for a job, a description and the directions for that order should be entered on a **duplicate work order,** one copy of which is

kept in the office and the other sent to the foreman of the room where the first work is to be done on the job. It goes with the job from room to room and is returned to the office after the goods are delivered. In order to facilitate the accounting work, each job should be given a number and all charges or references to that job should be made through that number, which is used on the time tickets, material-and-supplies requisitions, and on the separate assembling card for each job. A convenient form of order sheet is shown in Fig. 2.

Date Jan. 5, 190__

101 20	111 2	121__	131__	141__
102 16	112__	122__	132__	142__
103 14	113__	123__	133__	143__
104__	114__	124__	134__	144__
105__	115__	125__	135__	145__
106__	116__	126__	136__	146__
107__	117__	127__	137__	147__
108__	118__	128__	138__	148__
109__	119__	129__	139__	149__
110__	120__	130__	140__	150__

FIG. 4

36. That the progress of each job through the different departments may be known at a glance, a method sometimes adopted is to give each step of the work a number, as shown in Fig. 3.

Sheets like Fig. 4 are printed with job numbers and a space for memoranda beside each number.

A card like Fig. 5 is given to each job and placed in a file according to its consecutive number.

Every morning a clerk goes through the departments with the sheet of Fig. 4 and notes the condition of each job, entering beside each job number the figure of the list in Fig. 3

denoting the condition the job is in. From the illustration of Fig. 4 it will be seen that job 101 has been delivered; 102 is ready for press; 103 is ready for imposition; and that job 111 is on case. When this sheet reaches the office the condition of each job is noted on its card, as shown in Fig. 5, which shows that job 111 was received in the composing room on January 4, was on case January 5, and was in the press room on January 8. These records being kept up to

	Job		Press
	Book		Bindery

Order received Jan. 4, 190 Job No. 111

Title Booklet—New Styles.

Edition ____ No. ____ No. Copies 3000

Form No. ____ Wanted Jan. 13.

For Whom Warren Furniture Co.

1/5	1/6	1/7	1/8	1/10	1/11	1/12												
2	8	13	17	18	18	19												

Delivered Jan. 12, ____ by errand boy.

FIG. 5

date, a reference to the card for a job shows at a glance the different stages the job has passed through and its present condition.

37. All material and supplies should be in charge of one person, and none should be given out without a signed requisition. **Material-and-supplies records** should be kept so as to show at any time the amount of each kind of material and supplies received, given out, and on hand. A good form

is shown in Fig. 6. If cards are used for these records, two files may be kept, one for material and one for supplies. Thus divided and indexed alphabetically as shown, any desired card can be quickly found. The cards for material may be of a different color than those used for supplies. This will be found of great advantage if but one file is used. The amount on hand, as shown by the records, should be verified occasionally by taking a complete inventory.

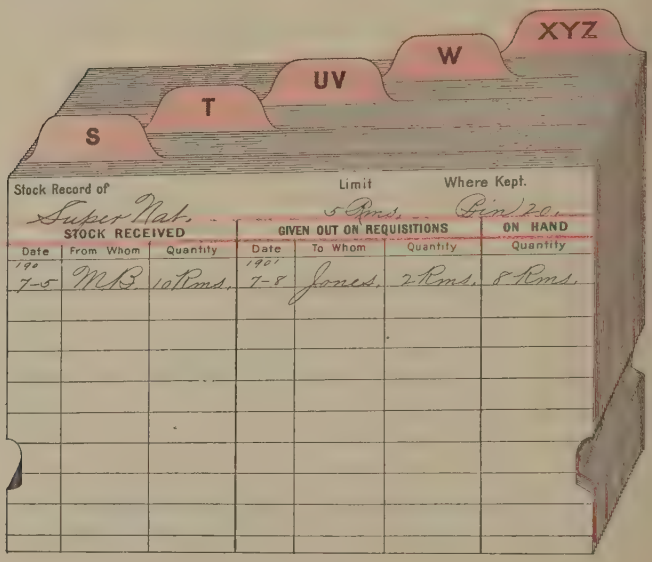


FIG. 6

38. A good form for a **material requisition** is shown in Fig. 7. The same general form may be used for a **supplies requisition,** but each should have a distinctive heading. If desired, they may be on a paper of different colors. The requisition for each class should be numbered consecutively as received by the person filling them. When the material or supplies called for by a requisition has been delivered and a record of it made on the proper material or supplies

record card, the requisitions are turned over to a clerk, who makes the extensions of value at cost plus freight, enters them on the job assembling card, as shown in Fig. 10, and files the requisitions according to their

Consecutive Number of Requisition as Received by Material and Stock Clerk 75

Foreman's O. K. J. L. H.

MATERIAL REQUISITION

Work Order No. 111

(Enter no stock on this blank except that going into the above work-order number. The quantity only is desired. File this blank with the record clerk at the close of the day.)

Quantity	Grade	Amount	
1 R. 4½ 2	Royal Mitton, 25×38-70#	8	50
6 R. 2 2	Super Whites, 22×28-70#	21	70
		30	20

Date Jan. 8, 190

Received by Robert Buchanon,

Entered on Material and Supplies Record by Jno. Barnes

FIG. 7

numbers. Any material or supplies that cannot be charged to any particular job but are drawn for general use, such as paper, paste, oils, and inks, should be entered in the material column of the miscellaneous-work assembling card for the period.

39. Each employe whose labor applies directly to the various jobs should be given a number, which is used instead of the name in compiling assembling cards, etc. All such workmen should make a daily report of the time worked on each job. Such reports are best made by the use of **time tickets**, as shown in Fig. 8. The only writing necessary on these tickets is to record the work order number, a word or two indicating what was done, and make a mark as shown in the illustration above the number 111. This mark shows when work on the order number above it stopped.

Miscellaneous work not chargeable to any particular job should be recorded. At the end of the day these time tickets should be turned in to the office and entered the next day on the pay roll and on the assembling card, one of which is kept for each job and one for miscellaneous work done during the period.

The unit of time is 6 minutes, one-tenth of an hour, which is small enough for all practical purposes. The ratio between the unit rate and the hour rate is not broken; therefore, by multiplying the total units by the hour rate and moving the decimal point one additional place to the left, the same result is obtained as if multiplying by hours and minutes. This process eliminates all fractions, a most desirable thing. All of the common time-table calculations are applicable to this unit of time.

The column of numbers at the left of the ticket represents the time units. The total number of units for each number on which work is done is ascertained by simple subtraction. These tickets should be delivered to the record clerk daily and the time units entered to the respective workmen's numbers on the assembling card and on the pay roll. The amount of such pay roll is charged to labor account.

The general superintendent, foremen, engineers, etc., whose duties are an indirect charge against the whole work done, need not have numbers. Their pay may be included in the salaries account together with that of the officers and office help, or may be handled through a superintendence account.

TIME TICKET—COMPOSING ROOM

(PRESENT THIS TICKET TO THE FOREMAN AT THE CLOSE OF THE DAY)

Date Jan 4 190. Rate 2.50 Workman's No. 1

Name James Lamb. Foreman's O. K. W.T.S.

		Work Order No.			Work Order No.
	7 00	98			
1	7 06	Makeup			
2	7 12			12 06	
3	7 18			12 12	
4	7 24			12 18	
5	7 30			12 24	
6	7 36			12 30	
7	7 42			12 36	
8	7 48			12 42	
9	7 54			12 48	
10	8 00			12 54	
11	8 06			1 00	
12	8 12		51	1 06	
13	8 18		52	1 12	
14	8 24		53	1 18	
15	8 30		54	1 24	
16	8 36		55	1 30	
17	8 42		56	1 36	
18	8 48		57	1 42	
19	8 54		58	1 48	
20	9 00		59	1 54	
21	9 06		60	2 00	
22	9 12		61	2 06	
23	9 18		62	2 12	
24	9 24		63	2 18	
25	9 30		64	2 24	
26	9 36		65	2 30	
27	9 42		66	2 36	111
28	9 48		67	2 42	Composition.
29	9 54		68	2 48	
30	10 00		69	2 54	
31	10 06		70	3 00	
32	10 12		71	3 06	
33	10 18		72	3 12	
34	10 24		73	3 18	
35	10 30	Misc.	74	3 24	
36	10 36		75	3 30	
37	10 42		76	3 36	
38	10 48		77	3 42	
39	10 54		78	3 48	
40	11 00		79	3 54	
41	11 06		80	4 00	
42	11 12		81	4 06	
43	11 18		82	4 12	
44	11 24		83	4 18	
45	11 30		84	4 24	
46	11 36		85	4 30	
47	11 42		86	4 36	
48	11 48		87	4 42	
49	11 54		88	4 48	
50	12 00		89	4 54	
			90	5 00	

Overtime:

FIG. 8

TIME BOOK AND PAY ROLL

For week ending Jan. 9, 190_

NAME	No.	M. H.	M. U.	T. H.	T. U.	W. H.	W. U.	T. H.	T. U.	F. H.	F. U.	S. H.	S. U.	Total Time H.	Total Time U.	Rate Per Day	Rate Per Unit	Amt. Adv.	Total Amt. Due	REMARKS
Wm. T. Sands,	✓	9	-	9	-	9	-	9	-	9	-	9	-	54	-	3.50			21	-
James Lamb,	1	9	-	9	-	9	-	9	-	9	-	9	-	54	-	2.50			15	-
Samuel Leach,	2	9	-	9	-	9	-	9	-	9	-	-	-	45	-	2.50			12.50	
J. T. Quick,	3	9	-	9	-	9	-	9	-	9	-	9	-	54	-	2.50		1	-	14	-
L. E. Clark,	4	9	-	9	-	9	-	9	-	9	-	9	-	54	-	3	-			18	-
J. L. Handy,	✓	9	-	9	-	9	-	9	-	9	-	9	-	54	-	3.50				21	-
Robert Buchanan,	5	9	-	9	-	9	-	9	-	9	-	9	-	54	-	3	-			18	-
John Barnes,	6	9	-	9	-	9	-	9	-	9	-	9	-	54	-	1.50				9	-
L. I. Barton,	7	9	-	9	-	9	-	9	-	9	-	9	-	54	-	1.50				9	-
Peter Snyder,	✓	9	-	9	-	9	-	9	-	9	-	9	-	54	-	3.50				21	-
Elliott Parker,	8	9	-	9	-	9	-	9	-	9	-	9	-	54	-	.50				3	-
Jennie Gray,	9	9	-	9	-	9	-	9	-	9	-	9	-	54	-	.50				3	-
Grace Brown,	10	9	-	9	-	9	-	9	-	9	-	9	-	54	-	.50				3	-
																		1	-	167.50	

FIG. 9

Summary:

Material 30.20

Supplies

Labor 22.21

Indirect charges 17.47 - 25%

Total 69.88

ASSEMBLIN

Orde

Title Booklet - New

For Warren Furniture Co. Ac

To be delivered Jan. 26,

Remarks.

Date	Workman's No.	Material Order No.	Material		Time Hours	Time Units	Composition	Proof-reading	Alterations	In
Jan. 4	1				2	6	72			
	2				2	—	56			
	3				3	—	83			
5	1				9	—	250			
	2				9	—	250			
	3				9	—	250			
6	4				4	4		147		
	1				3	8			17	
7	5				8	5				
8		75	1 R 4½ 2 Royal Mellotone	8.50						
			4 R 3 2 Super-White 1705	21.70						
	6				4	—				
10	7				9	—				
	8				9	—				
11	7				9	—				
	8				9	—				
12	2				9					
				30.20						

ARD

d Jan. 4, 190__

Files.

2 Winter St, City

Job No. 111

3000 Copies

12 Pages

23.29 Per M.

Foundry	Electrotypes	Distribution	Make-Ready	Running	Cleaning	Cutting	Binding		Total
									72
									56
									83
									2 50
									2 50
									2 50
									1 47
									1 06
			2 83						2 83
				74					74
							1 —		1 —
							1 —		1 —
							1 —		1 —
							1 —		1 —
		2 50							2 50
									22 21

10

40. Fig. 9 shows a good form of **time book and pay roll.** The names and numbers are written in at the beginning of the week and the time worked entered daily. The use of the different columns is easily understood from their headings.

41. Each job is given an **assembling card** on which is brought together daily the direct-expense items belonging to the job. Fig. 10 shows such a card. When a work order is sent into the factory an assembling card is opened for the job and filed with the other assembling cards, according to the number of the job. As the time tickets come in the data affecting each job are entered on its assembling card, the date, work man's number, and the time worked on the job being entered in their special columns and the cost of the work entered in the column corresponding to the kind of work done. The material and supplies used in the job are entered on the assembling card from the filled material or supplies requisitions. When the job is completed the cost for material, supplies, and labor is found and entered in the summary section, at the upper left-hand corner. At the end of the period when the average per cent. of indirect charges to date has been found, the amount for these charges is entered in the summary on the assembling cards for completed jobs and those cards taken out of the file for jobs in process and placed in the file for completed jobs. If desired, the proportion of indirect charges according to the last average per cent. can be entered in the summary as soon as all the direct charges have been found. This will make it possible to remove the assembling cards for completed jobs from the active file as soon as the work is done; when the per cent. of indirect charges does not vary much, no serious objection can be made to this plan.

A factory making two or three lines continuously could have an assembling card for each 2-weeks' or 4-weeks' period. If desired, such a factory could keep Ledger accounts with each line instead of using assembling cards.

The direct charges, as has been said, are the material and the supplies used directly in a job, and the labor, as shown

by the workmen's time tickets, directly performed on that job. The indirect charges must include every other kind of expense connected with the business. This covers the cost of supplies like ink, paper, oils, paste, etc. that cannot well be charged to any particular job; also, the cost for miscellaneous work done by workmen and charged as such on their time tickets. The cost of both will be shown separately on the miscellaneous-work assembling card for the period. The expenses for the period for fuel, insurance, taxes, general expense, salaries, and impairment and betterment, as shown by the Ledger accounts, must also be spread over the finished product on some equitable basis, and no truer one can be suggested than the proportion of the direct charges. To illustrate: Suppose that the cost for raw material on job 20 was $50, on job 21 was $40, and on job 22 was $35; that the cost for supplies for No. 20 was $6, for No. 21 was $1.50, and for No. 22 was $1; and that the cost for labor for No. 20 was $70, for No. 21 was $50, and for No. 22 was $24.50. The summary on each assembling card would show as follows:

	No. 20	No. 21	No. 22
Material	50.00	40.00	35.00
Supplies	6.00	1.50	1.00
Labor	70.00	50.00	24.50
	126.00	91.50	60.50

Suppose that the miscellaneous assembling card for the period showed the cost of labor to be $12, and for supplies $9; also that the Ledger accounts for fuel, insurance, taxes, general expense, salaries, and impairment and betterment show the Manufacturing account must be charged $90.

To find the amount to be charged to each job for indirect charges, multiply the amount of the direct charges for each job by the total amount of the indirect charges and divide their product by the total amount of the direct charges for all the jobs, as follows:

$$126.00 \times 111 \div 278 = 50.31$$
$$91.50 \times 111 \div 278 = 36.53$$
$$60.50 \times 111 \div 278 = 24.16$$

Or, taking the direct charge for each job as the numerator and the total direct charges for all of the jobs as the denominator of a fraction, and multiplying this by the total indirect charges, we have:

$$111 \times \frac{126}{278} = 50.31$$

$$111 \times \frac{91.50}{278} = 36.53$$

$$111 \times \frac{60.50}{278} = 24.16$$

In the preceding illustration the direct charges were $278 and the indirect charges $111, a total of $389, which gives 71.5 per cent. of the direct charges and 28.5 per cent. indirect. If the above figures show the cost of the operation of the printing office under normal conditions, they give the average ratio between direct and indirect charges. When this ratio is definitely established by comparing a number of periods, the cost of each job, not only for direct charges but for its proper share of indirect charges, can not only be easily found, on completion of the work, but a fairly accurate estimate of the cost can be made in advance.

MODEL SET

42. Manufacturing Cost.—In this Model Set will be illustrated the manner of ascertaining the cost of production, the use of a perpetual inventory, and the making of a Four-Weeks' Loss and Gain statement. In order to make the method clear, the following transactions for a manufacturing business producing one line of goods are given, and from these the books will be worked out according to the method explained in the preceding pages.

The books kept will be a Cash Book, Journal, and Ledger. A Sales Book will not be used, as its use is generally understood, and the object here is to illustrate the method of handling the special form of Cash Book and the Ledger accounts to show the loss and gain for a four-weeks' period.

TRANSACTIONS

SCRANTON, PA., DECEMBER 31, 190

The Enterprise Manufacturing Company has decided to use new forms of books after January 1, and the closing of the books for the year just ended is to be performed on the new Ledger. On the evening of December 31, 190 , the company had debits and credits on their Ledger as shown by the following trial balance:

TRIAL BALANCE, DECEMBER 31, 190

	Cash, bank 14,350.10, drawer 60.00,		14410.10
2	Bills Receivable,		2517.25
34	J. H. King,		1441.55
35	Small & Eustice,		1214.65
36	J. J. Jenkins,		1658.44
37	Reynolds & Co.,		1321.27
38	Wrenn & Co.,		1253.34
39	Rogers & Pugh,		1335.45
4	Plant,		99800.00
	Mill Site,	2200.00	
	Buildings,	23000.00	
	Machinery,	63000.00	
	Power Plant,	10000.00	
	Tools and Fixtures,	500.00	
	Office Furniture,	800.00	
	Horses and Wagons,	300.00	
13	Raw Material,		46116.00
14	Supplies,		12737.10
16	Fuel,		8620.75
24	Goods in Process,		3750.00
20	Bad Debts,		310.15
7	Insurance,		2700.00
6	Taxes,		920.00
23	General Expense,		1715.50
15	Labor,		22785.10
22	Salaries,		6000.00
17	Interest,		32.14
18	Cash Discount,		560.25
19	Goods Returned and Rebate,		65.50
8	Tenant Property,		10000.00

27	Goods,		36055.50
28	Consignment,		68118.15
29	Waste,		2312.40
5	Impairment and Betterment,		30157.60
40	R. M. Wilson,		410.00
41	J. C. Lincoln,		300.00
42	New York Machinery Co.,		615.00
3	Bills Payable,		710.00
33	Undivided Profits,		1805.89
1	Capital Stock,		100000.00
11	Rent,		780.00
		241264.54	241264.54

Make the Journal entry necessary to open the new books, transfer the cash balance and bank balance to the proper columns in the Cash Book, and post the items to the Ledger.

The following inventories were on hand:

Liabilities

Taxes, accrued but not paid or entered,	306.67

Resources

Insurance, unexpired,	900.00
Raw Material,	9675.00
Supplies,	3600.00
Fuel, estimated,	750.00
Goods in Process, estimated,	3750.00
Goods, 7500 lb.,	1350.00
Consignment, 4527 lb.,	815.00
Waste, estimated,	720.00

Enter these inventories in the Ledger in red ink, resources on the credit side and liabilities on the debit side of the accounts to which they belong.

From the Ledger accounts as they now stand, make the necessary Journal entries to construct the Manufacturing account (see Art. 4), and to transfer to it the balances of Goods, Consignment, and Waste accounts and to transfer to Loss and Gain the gross gain as then shown by this account; also, to transfer the loss or gain on Rent, Cash Discount, Bad Debts, and Interest to the Loss and Gain account.

Post the entries to the Ledger.

The board of directors have declared a dividend of 12 per cent.; the balance of the gain goes to Undivided Profits.

Make the Journal entries to close the Loss and Gain account and transfer the amount of dividend to Dividend account and the balance of the gain to Undivided Profits account. Post to the Ledger.

Rule all the accounts that balance and bring down the inventories below the line in black ink under the date of January 1. Carry the balance in each account to the balance column, using black ink if debit, red ink if credit.

JANUARY 1, 190

To make allowance for any overvaluation in the Goods inventory, a reduction of 10 per cent. is to be made before beginning business for the period (see Art. **20**).

Make an entry to debit Loss and Gain and credit Goods $135.

Post to the Ledger.

The following amounts were received:

J. H. King, on account,	321.05
Small & Eustice, on account,	110.65
Reynolds & Co., on account,	95.27
J. J. Jenkins, on account,	1314.20
Rogers & Pugh, on account,	714.15
Cash sales, 363 lb. old,	67.50
Bills Receivable,	350.00

Deposit day's receipts in bank and enter amount in Bank Deposit column (see Art. **32**). Post items in Sundries column to Ledger.

—4—

Sent today on consignment to Mitchell & Co., 2021 lb. new.

Post to Ledger.

Paid Union Paint Works, supplies, three bills, $9.50, $21.10, and $50, there being a discount of 5% on the latter (see Art. **5**), 78.10

Enter on credit side of Cash Book.

—7—

Sent today on consignment to Mitchell & Co., 3712 lb. new.

Post to Ledger.

Paid the following amounts:

Council Bros., raw material,	120.00
W. E. Coffin, agent, freight on coal,	67.50

Enter on credit side of Cash Book.

—8—

The following amounts were received:

Reynolds & Co., for bills of $915.10, less 5% discount,	869.34
Wrenn & Co., for bill of $221, less 5% discount,	209.95
Rogers & Pugh, for bill of $300, less 5% discount,	285.00
Cash sales, 1163 lb. old,	215.95
Bills Receivable,	175.00
Bills Receivable, note of $317.10, with interest for 30 days $1.59,	318.69
Consignment,	1310.25

Enter in Cash Book, deposit day's receipts, and enter amount in Bank Deposit column. Post items in Sundries column to Ledger.

Made the following payments:

Stancil Bros., raw material,	410.00
Robbins & Ranson, raw material $209, supplies $75.09,	284.09
Cash for telegram,	.25
Cash for expressage on electros,	.45
Cash for cleaning out well,	1.25
Cash for repairing pump,	.75
W. E. Coffin, agent, freight on raw material,	72.50
Ford, Tally & Co., raw material,	975.00
Cash for freight bills, raw material, $27.07, supplies $2.10,	29.17
R. M. Wilson,	410.00
Creek Coal Co., coal,	202.50
Pay roll, labor (withheld $50 rent due),	462.15

Enter in Cash Book (see Art. **32** in regard to pay roll).

Determine the cash balance, bank balance, and cash in drawer. Enter the balances in red ink in the proper columns.

Post items in Sundries column to Ledger.

The Sales Book shows the following sales, the goods sold being 3917 lb. old and 8008 lb. new:

Small & Eustice,	221.40
J. J. Jenkins,	620.10
Reynolds & Co.,	710.07
Wrenn & Co.,	316.70
Rogers & Pugh,	427.18
Total,	2295.45

Post these amounts to the accounts of the parties and credit Goods account with the total amount.

—— 10 ——

Sent today on consignment to Mitchell & Co., 4211 lb. new.

Post to Ledger.

—— 14 ——

Sent today on consignment to Mitchell & Co., 3817 lb. new.

Post to Ledger.

—— 15 ——

Received the following amounts:

Wrenn & Co., on account, $27.50 and freight bill for $2.14, the agreement being that the goods were to be delivered,	29.64
The bank has collected drafts for which they have credited our account as follows:	
Wrenn & Co., $257.35, collection charge .25,	257.10
Reynolds & Co., $308.90 and interest $1.54,	310.44
Bills Receivable, $760, interest $3.80, collection charge .50,	763.30
Cash sales, 498 lb. new,	92.50
Waste, sold,	30.00
Rent,	10.00

Enter in the Cash Book. Post the items in the Sundries column in the Ledger.

Sold 10-acre tract from mill site,	950.00
Received $750 in Bills Receivable and $200 in cash.	

Journal and Cash Book entries. Post to the Ledger.

J. J. Jenkins, for bill of $344.24, less 5% discount,	327.03
Consignment,	1750.15

Enter in the Cash Book.

Made the following payments:	
Dividend,	12000.00
Ellis & Co., raw material,	207.60
Gorman & Co., supplies,	37.32
Springer & Dail, raw material,	600.00
Creek Coal Co., fuel,	350.00
New York Machinery Co., repairs,	62.50
Cash on outward freight,	2.10
Cash, freight on oils, fuel account,	1.70

Enter in the Cash Book.

Received from the New York Machinery Co., ten new machines,	14000.00
Paid New York Machinery Co. $2000 in cash and gave 12-months' note for $12000.	
Discarded eight old machines carried in the Plant account at $700 each,	5600.00

Journal and Cash Book entries. Post Journal entries to the Ledger.

Made the following payments:	
Pay roll, $533.10 labor and $207.10 work on new warehouse (withheld $50 for rent), (see Art. **32**),	740.20
Cash, freight on account of new building,	15.25
Southern Lumber Co., lumber for new building,	315.00
W. E. Coffin, freight on lime for new building,	44.50
Tiling Co., brick for new building,	450.00
Lime Kiln Co., lime for new building,	110.00
Taxes,	270.00
Renewal five insurance policies,	170.00

Enter in the Cash Book, opening one of the blank columns on the credit side for an account with New Building.

Post the items in the Sundries columns to the Ledger.

Deposit all receipts except $50.92, which brings the amount in the cash drawer back to $60, and enter in the Bank Deposit column, the collected drafts separately.

Determine the bank balance and enter this and the cash balance in the proper columns.

—— 17 ——

Sent today on consignment to Mitchell & Co., 3622 lb. new.

Post to Ledger.

—— 20 ——

Sent today on consignment to Mitchell & Co., 4048 lb. new.

Post to Ledger.

—— 22 ——

The following amounts were received:

Cash sales, 928 lb. new,	172.50
Wrenn & Co., on account,	325.00
Small & Eustice, $384, less discount of $2,	382.00

The bank has credited our account with the following collections:

J. H. King, $1120.50, charges .50,	1120.00
Rogers & Pugh, $321.30, charges .15,	321.15
Wrenn & Co., $420.30, charges .10,	420.20
Consignment,	1134.40

Enter in the Cash Book.

Made the following payments:

"Morning Star," advertising directors' meeting,	5.00
W. E. Coffin, 1000-mile book for C. N. Wilson,	25.00
C. N. Wilson, cash for expenses,	25.00
J. W. Scott & Co., trunk and valise for C. N. Wilson,	15.00
Sent check to C. N. Wilson,	50.00
Pay roll, labor $520.40, new building $419.70 (withheld $50 for rent),	940.10

Enter in the Cash Book. Open one of the columns on the credit side for an account with C. N. Wilson.

Post items in the Sundries columns to the Ledger.

Deposit receipts and enter in Bank Deposit column, collected drafts separately.

Determine the cash balance, bank balance, and money in drawer.

—28—

Discounted four notes as follows:	
Bills Receivable $150, discount for 30 days .75,	149.25
Bills Receivable $215, discount for 60 days $2.15,	212.85
Bills Receivable $320, discount for 90 days $4.80,	315.20
Bills Receivable $630, discount for 90 days $9.45,	620.55
Enter separately the face of the notes in the Sundries column, the discounts in the Discount column, and the proceeds in the Bank Deposit column.	
Received the following amounts:	
Raw material sold,	210.00
Impairment and Betterment, sold discarded machinery,	310.00
Consignment,	960.00
Paid the following amounts:	
Telephone Exchange, bill to date,	3.00
Bills Payable, sundries,	310.35
Check to C. N. Wilson, salary to date,	50.00
Pay roll, labor ($50 withheld for rent),	565.00
J. W. Justice, salary to 28th,	50.00
J. N. Thomas, salary to 28th,	60.00
V. R. Carr, salary to 28th,	75.00
E. R. Curtis, salary to 28th,	100.00
B. B. Brown, bookkeeper, salary to 28th,	75.00
S. F. Finley, salary to 28th,	60.00
C. C. Goodman, salary to 28th,	70.00
Outward freight, cash,	8.23
Our account has been charged by the bank with a sight draft of Merrill & Co., for raw material,	515.75
Enter in the Cash Book.	

Deposit the day's receipts and cash drawer balance.

Post the items in the Sundries column.

Foot, balance, and rule the Cash Book.

Post the totals of all the special columns to the proper accounts. Cash Sales column posts to Goods account, Incidentals to General Expense, Repairing to Impairment and Betterment, Int. Com. Outw'd Frt. to Interest.

Open an account with New Building in space 12.

Open an account with C. N. Wilson in space 21.

Take a Trial Balance.

INVENTORIES

The following are found by estimating the value of the items on hand:

Waste,	1010.00
Fuel,	670.00
Goods in Process,	3695.00

The following are determined from the Ledger accounts and records of quantities used and sold:

Raw Material:

Inventory Jan. 1,	9675.00		
Purchases,	3136.92		
		12811.92	
Cash sales,	210.00		
Used,	7434.00		
		7644.00	
			5167.92

Supplies:

Inventory Jan. 1,	3600.00		
Purchases,	192.61		
		3792.61	
Used,		420.00	
			3372.61

Old goods:

Inventory Jan. 1,		7500 lb.	
Sales on account,	3917 lb.		
Cash sales,	1526 lb.		
		5443 lb.	
On hand Jan. 28,		2057 lb. @ 16.2c.,	333.23

The value of the old goods is figured at the inventory price of Dec. 31, less the 10% deduction to adjust the probable overvaluation; that is, \$1350 − \$135 = \$1215; \$1215 ÷ 7500 = 16.2 c.

New goods:

Produced during period,		74629 lb.
Sales on account,	8008 lb.	
Cash sales,	1426 lb.	
Consigned,	21431 lb.	
		30865 lb.
On hand Jan. 28,		43764 lb.

The value of the new goods is figured at the cost to manufacture during the period.

Consignment:

Inventory Jan. 1,	4527 lb.	
Consigned, new goods,	21431 lb.	
		25958 lb.
Sold, old goods,	4527 lb.	
Sold, new goods,	20214 lb.	
		24741 lb.
On hand Jan. 28,		1217 lb.

The value of the Consignment inventory, being all new goods, is to be figured at the manufacturing cost for the period.

From the records of the quantities of raw material and supplies used, the Trial Balance, the inventories of Waste, Fuel, Goods in Process, Raw Material, and Supplies, the pro rata for the period (one-thirteenth) of the estimated cost for the year of Insurance (\$2704) and Taxes (\$923), and the allowance for the period for Impairment and Betterment, one-thirteenth of that for the year (see Art. **13**), make the Journal entry to show the total manufacturing cost for the period.

Depreciation on plant for the year:

Mill site,	2200— 0%	
Buildings,	23000— 3%	690.00
Machinery,	71400—10%	7140.00
Power Plant,	10000— 7%	700.00
Tools and Fixtures,	500—15%	75.00
Office Furniture,	800—10%	80.00
Horses and Wagons,	300—25%	75.00
		8760.00

$8760 ÷ 13 = $673.84.

The total cost for the period divided by the number of pounds produced, 74629, gives the cost price per pound to manufacture. The cost per pound now being known, find the value of the inventories of new Goods and Consignment.

New goods on hand Jan. 28, 43764 lb. @ 16.2 c., $7089.77, to which must be added the value of the old goods on hand, $333.23, as found above, making the total value of the Goods inventory $7423.

Consignment, on hand, 1217 lb. @ 16.2c., $197.15.

Enter the inventories of Waste, Fuel, Goods in Process, Raw Material, and Supplies in the Ledger in red ink on the credit side of the accounts to which they belong.

Post the Journal entry of Manufacturing cost to the Ledger.

Make a Journal entry to transfer the total cost of the Goods made during the period to Goods account and post it to the Ledger.

Make a Journal entry debiting Consignment and crediting Goods account with the value of the goods shipped during the period and post it to the Ledger.

Enter the inventories of Goods and Consignment in the Ledger in red ink on the credit side of those accounts.

Make Journal entries to charge Rent with one-thirteenth of the estimated cost of taxes and insurance for the year ($260) and one-thirteenth of the amount allowed for the year for depreciation (5%) on Tenant Property. Post to the Ledger.

Make entries to assemble in the Four-Weeks' Loss and Gain account the loss or gain for the period on Rent, Goods, Consignment, Waste, Cash Discount, Interest, Goods in Process, Bad Debts, and Salesman's accounts. Salesman is credited for his expense bills, $165, and for one-thirteenth of his yearly salary of $900.

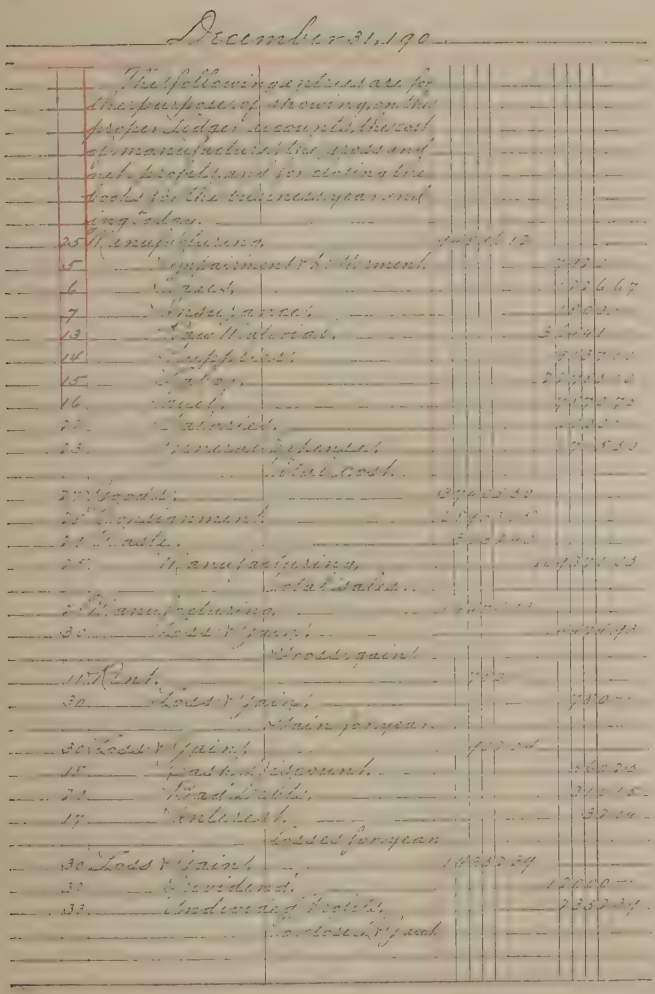
Post these entries to the Ledger and then make an entry to transfer the net gain for the period as then shown by the Four-Weeks' Loss and Gain account and post it.

Rule the accounts and bring the inventories below the line in black ink. Carry the balance in each account to the balance column, using black ink if debit, red ink if credit.

JOURNAL

1
Scranton, Pa., Dec 31, 19--
The Enterprise Mfg Co to
56 025
6 050
53 34
1 935 50
A. McGibbons

2



December 31, 190

The following entries are for the purpose of showing, on the proper Ledger accounts, the cost of manufacture, the gross and net profits, and for closing the books for the business year ending today.

25	Manufacturing	[illegible]	
5	Impairment & betterment		[illegible]
6	Taxes		[illegible]
7	Insurance		[illegible]
13	Raw Material		[illegible]
14	Supplies		[illegible]
15	Labor		[illegible]
16	Fuel		[illegible]
22	Salaries		[illegible]
23	General Expense		[illegible]
	Total cost		
27	Goods	[illegible]	
28	Consignment	[illegible]	
29	Waste	[illegible]	
25	Manufacturing		[illegible]
	Total sales		
29	Manufacturing	[illegible]	
30	Loss & gain		[illegible]
	Gross gain		
11	Rent	[illegible]	
30	Loss & gain		[illegible]
	Gain for year		
30	Loss & gain	[illegible]	
18	Cash discount		[illegible]
20	Bad Debts		[illegible]
17	Interest		[illegible]
	Losses for year		
30	Loss & gain	[illegible]	
32	Dividend		[illegible]
33	Undivided Profits		[illegible]
	Cr. close L. & gain		

3

January 1, 190.

30	Loss & Gain,		135 —	
27	Goods,			135 —
		Probable amount that inventory should be reduced to show cost value		
		15		
2	Bills Receivable,		750 —	
4	Plant,			750 —
		Sold 10-acre tract from mill site. $950. cash $200.		
		15		
4	Plant, Machinery,		14000 —	
42	New York Machinery Co.,			14000 —
		10 new machines		
		15		
42	New York Machinery Co.,		12000 —	
3	Bills Payable,			12000 —
		12 mos. note.		
		15		
5	Impairment & Betterment,		5600 —	
4	Plant, Machinery,			5600 —
		Discarded 8 machines.		
		28		
25	Manufacturing,		12089 89	
13	Raw Material,			7434 —
14	Supplies,			420 —
15	Labor,			208065
16	Fuel,			70170
7	Insurance,			208 —
6	Taxes,			71 —
23	General Expense,			1070
22	Salaries,			490 —
5	Impairment & Betterment,			67384
		Entries necessary to make up manufacturing cost for four-week's period. 74629 lb. cost 16.2 ¢ per lb.		

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January 28, 190-

| | | |

2

CASH BOOK

CASH RECEIPTS AND BANK JOURNAL

DATE 190	NAME	L. F.	SUNDRIES	CASH DISCOUNT POSTS DR.	CASH SALES	INTEREST	CASH BALANCE	BANK DEPOSIT
Dec. 31	Balances,	✓					14410 10	14350 10
Jan. 1	J. H. King,	34	321 05					2972 82
	Small & Eustice,	35	110 65					3434 18
	Reynolds & Co.,	37	95 27					257 10
	J. J. Jenkins,	36	1314 20					310 44
	Rogers & Pugh,	39	714 15					763 30
	Cash Sales,	✓			67 50			
	Bills Receivable,	2	350					
8	Reynolds & Co.,	37	915 10	45 76				
	Wrenn & Co.,	38	221 –	11 05				
	Rogers & Pugh,	39	300 –	15 –				
	Cash Sales,				215 95			
	Bills Receivable,	2	175 –					
	" "	2	317 10			1 59		
	Consignment,	28	1310 25					
	Tenth to 8th,	11	50 –					
15	Wrenn & Co.,	38	29 64	2 14				
	" "	38	257 35	25				
	Reynolds & Co.,	37	308 90			1 54		
	Bills Receivable,	2	760 –	50		3 50		
			7540 66	74 70	283 45	6 93	[illegible]	[illegible]

CASH PAYMENTS BANK JOURNAL AND AUXILIARY DISTRIBUTION BOOK

DATE	NO. OF CHEC	NAME	CREDITS: CASH PAYMENTS	AMOUNT OF CHECK	DEBITS—(Net Money): RAW MATERIAL	SUPPLIES	LABOR	FUEL	INCIDENTALS	SALARIES	REPAIR NO.	INT. CHK OUTWD PMT.	SUNDRIES	L.F.

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CASH RECEIPTS AND BANK JOURNAL

DATE 190-	NAME	L. F.	SUNDRIES	CASH DISCOUNT Posts Dr.	CASH SALES	INTEREST	CASH BALANCE	BANK DEPOSIT
Jan. 15	Footings forward,		7549 66	74 70	283 45	6 93	1441 10	2207 94
	Cash Sales,				92 50			243 26
	Waste,	29	30 —					879 50
	Rent,	11	10 —					412 0 —
	Bank Mill Sites,	4	200 —					321 15
	J. J. Jenkins,	36	344 24	17 21				420 20
	Consignment,	28	1750 15					1134 40
	Rent to 15th,	11	50 —					50 —
22	Cash Sales,	✓			172 50			
	Wrenn & Co.,	38	325 —					
	Small & Eustices,	35	384 —	2 —				
	J. S. King,	34	1120 50	50				
	Rogers & Pugh,	39	321 30	15				
	Wrenn & Co.,	38	420 30	10				
	Consignment,	28	1134 40					
	Rent to 22,	11	50 —					
			1368 95	94 66	548 45	6 93	1441 10	2844 45

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CASH PAYMENTS BANK JOURNAL AND AUXILIARY DISTRIBUTION BOOK

DATE 1910	No. of Check	NAME	CASH PAYMENTS	AMOUNT OF CHECK	RAW MATERIAL	SUPPLIES	LABOR	FUEL	INCIDENTALS	SALARIES	REPAIRING	INT. COM. DUTY'D FRT.	SUNDRIES	L. F.	New Bldg.	Wilson's Salesroom
		CREDITS			DEBITS—(Post Monthly)											
Jan 15	✓	Footings forward,	31 87	15326 76	2021 17	192 61	4621 52	70 —	2 70				124 10 —			
	15	Springer & Daily,		600 —	600 —											
	16	Creek Coal Co.,		350 —				350 —								
	17	M.M. Machinery Co.,		62 50							62 50					
		Freight outward,	2 10									2 10				
		" oils,	1 70					1 70								
	18	M.M. Machinery Co.,		2000 —									200 —	42		
	19	Payroll,		690 20		46 30									207 10	
	20	"		50 —		50 —										
		Freight,	15 25												15 25	
	21	Southern Lumber Co.,		315 —											315 —	
	22	W.E. Coffin, Agt.,		44 50											44 50	
	23	Piling Co.,		450 —											450 —	
	24	Lime Kiln Co.,		110 —											110 —	
	25	Taxes, Jno. Ward Coll.,		270 —									270 —	6		
	26	Jno. Smith & Co., Agts.,		170 —									170 —	7		
22	27	Morning Star,		5 —					5 —							
	28	W.E. Coffin, Wharfage,		25 —												25 —
		C.M. Wilson, Sales,	25 —													25 —
			75 92	20468 96	2621 17	192 61	995 25	621 70	7 70		62 50	2 10	1485 —		1141 85	50 —

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CASH RECEIPTS AND BANK JOURNAL

DATE 190-	NAME	L. F.	SUNDRIES	CASH DISCOUNT Posts Dr.	CASH SALES	INTEREST				CASH BALANCE.	BANK DEPOSIT
Jan. 28	Footings forward,	✓	13689 55	94 66	548 45	6 93				1441 01	10284 945
	Bills Receivable,	2	150 —	75							149 25
	" "	2	215 —	2 15							212 85
	" "	2	320 —	4 80							315 20
	" "	2	630 —	9 45							620 55
	Raw Material,	13	210 —								156 77
	Impairment + Settlement,	5	310 —								
	Consignment,	28	960 —								
	Bank to 28th,	11	50 —								
			16534 55	111 81	548 45	6 93				1441 01	10313 407
							Interest,		6 93		
							Cash Sales,		548 45		
							Sundries,		16534 55		
									31507 03		
						Cash Dis.,		111 81			
						" Paymts,		84 15			
						Checks,		23408 16	23604 12	23408 16	
						Cash Balance,				7995 91	7995 91

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CASH PAYMENTS
BANK JOURNAL
AND AUXILIARY DISTRIBUTION BOOK

DATE 190.	No. of Check	NAME	CREDITS: Cash Payments	CREDITS: Amount of Check	DEBITS (Post Mortem): Raw Material	Supplies	Labor	Fuel	Incidentals	Salaries	Repairing	Int. Com. Outw'd Frt.	Sundries	L. F.	New Holdg.	Wilson, Salesman
Jan 22	✓	Footings forward	75 92	20468 96	2621 17	192 61	9,75 25	621 70	7 70		62 50	2 10	14850 —		1141 55	50 —
	29	J. W. Scott, t. unk.		15 —												15 —
	30	C. M. Wilson, Sales man		50 —												50 —
	31	Payroll		890 10			49 40								419 70	
	32	" "		50 —			50 —									
28	33	Telephone Exchange		3 —					3 —							
	34	Bills Payable		310 35									310 35 3			
	35	C. M. Wilson, Sales man		50 —												50 —
	36	Payroll		515 —			55 —									
	37	" "		50 —			50 —									
	38	J. H. Justice		50 —						50 —						
	39	J. N. Thomas		60 —						60 —						
	40	V. R. Carr		75						75 —						
	41	E. R. Curtis		100 —						100 —						
	42	B. B. Brown		75 —						75 —						
	43	S. F. Finley		60 —						60 —						
	44	C. C. Goodman		70 —						70 —						
		Freight, outward	8 23									8 23				
		Merrill & Co., Dfk.		515 75	515 75											
			84 15	23408 16	3136 92	192 61	2080 65	621 70	10 70	490 —	62 50	10 33	15160 35		1561 55	165 —

No. 1

Name Capital Stock.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec 31	J.	1		100000 —	100000 —

No. 2

Name Bills Receivable.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec 31	J.	1	2517 25		2517 25
Jan 1	C.B.	2		350 —	
8				175 —	
				317 10	
15				760 —	
15	J.	3	750 —		
28	C.B.	6		150 —	
				215 —	
				320 —	
				630 —	350 15

No. 3

Name Bills Payable

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190-					
Dec. 31	J.	1		710 —	710 —
Jan. 15		3		12000 —	
28	C.B.	7	31035		20965

No. 4

Name Plant.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1			99800 —
Mill Sites			2200 —		102250 —
Jan. 15	J.	3		750 —	
	C.B.	4		200 —	
Buildings,			23000 —		
Machinery,			63000 —		
Jan. 15	J.	3	14000 —		
				5600 —	
Power Plant,			10000 —		
Tools & Fixtures,			500 —		
Office Furniture,			800 —		
Horses & Wagons,			300 —		

No. 5.

Name Impairment & Betterment

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
1901 Dec. 31	J.	1		30157 60	
		2		7920 —	38077 60
Jan. 15		3	5600 —		
28	C.B.	6		310 —	
		7	6250		32725 10
	J.	3		673 84	33398 94

No. 6.

Name Taxes.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
1901 Dec. 31	J.	1	920 —		
Inventory,			306 67		
	J.	2		1226 67	
			1226 67	1226 67	
Jan. 1 Inventory,				306 67	306 67
15	C.B.	5	270 —		36 67
28	J.	3		71 —	107 67

No. 7.

Name Insurance.

Address

DATE		BOOK	FOLIO	DEBIT		CREDIT		BALANCE	
190.									
Dec.	31	J.	1	2700	—				
		Inventory				900	—		
		J.	2			1800	—		
				2700	—	2700	—		
Jan.	1	Inventory,		900	—			900	—
	15	C.B.	5	170	—			1070	—
	28	J.	3			208	—	862	—

No. 8.

Name Tenant Property.

Address

DATE		BOOK	FOLIO	DEBIT		CREDIT		BALANCE	
190.									
Dec.	31	J.	1	10000	—			10000	—

No. 9.

Name Tenant Property Impairment & Betterment.

Address

DATE 190	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Jan 28	J.	4		38 46	38 46

No. 10.

Name Tenant Property Taxes & Insurance.

Address

DATE 190	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Jan 28	J.	4		20 —	20 —

No 11

Name Rent.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190 Dec 31	J.	1		780 —	
		2	780 —		
Jan 8	C.B.	2		50 —	
15		4		10 —	
				50 —	
22				50 —	
28		6		50 —	210
	J.	4	20 —		
			38 46		
			1.51.54		
			210 —	210 —	

No. 12.

Name New Building.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190					
Jan. 28	C.B.	7	1561 55		1561 55

No. 13.

Name Raw Material.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190					
Dec. 31	J.	1	46116 —		
	Inventory			[illegible] —	
	J.	2		36441 —	
			46116 —	46116 —	
Jan. 1	Inventory		9675 —		9675 —
28	C.B.	6		210 —	
		7	3136 92		12601 92
	Inventory			[illegible]	
	J.	3		7434 —	
			12811 92	12811 92	
Jan. 29	Inventory		5167 92		5167 92

No. 14

Name Supplies.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec. 31	J.	1	12737 10		
	J.	2		9137 10	
			12737 10	12737 10	
Jan. 1	Inventory		3600 —		3600 —
28	C.B.	7	192 61		379261
	J.	3		420 —	
			379261	379261	
Jan. 29	Inventory		337261		337261

No. 15

Name Labor.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec. 31	J.	1	22785 10		
		2		22785 10	
Jan. 28	C.B.	7	2080 65		2080 65
	J.	3		2080 65	

No. 16

Name Fuel

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190-					
Dec. 31	J.	1	862075		
				750	
	J.	2		787075	
			862075	862075	
Jan. 1	Inventory		750 —		750 —
28	C.B.	7	621 70		1371 70
	J.	3		701 70	
			1371 70	1371 70	
Jan. 29	Inventory		670 —		670 —

No. 17.

Name Interest.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	32 14		
		2		32 14	
Jan. 28	C.B.	6		6 93	
		7	10 33		3 40
	J.	4		3 40	

No. 18.

Name Cash Discount.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	560 25		
		2		560 25	
Jan. 28	C.B.	6	111 81		111 81
	J.	4		111 81	

No. 19

Name Goods Returned & Rebates

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec. 31	J.	1	65 50		65 50

No. 20

Name Bad Debts

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec. 31	J.	1	310 15		
		2		310 15	
Jan. 28	J.	4		45 90	45 90

No. 21

Name C. N. Wilson, Salesman

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Jan. 28	C.B.	7	165 —		165 —
	J.	4		234 23	69 23

No. 22

Name Salaries.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec. 31	J.	1	6000—		
		2		6000—	
Jan. 28	C.B.	7	490—		490—
	J.	3		490—	

No. 23

Name General Expense.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec. 31	J.	1	1715 50		
		2		1715 50	
Jan. 28	C.B.	7	10 70		10 70
	J.	3		10 70	

No 24.

Name Goods in Process.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190- Dec 31	J. Inventory.	1	3750—	3750—	
Jan 1	Inventory.		3750—		3750—
	J. Inventory	4		3695— 55—	
Jan 29	Inventory		3695—		3695—

No 25.

Name Manufacturing

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190 Dec 31	J.	2	94896 12		
				109371 05	
			14474 93		
Jan 28	J.	3	12089 89		
		4		12089 89	

No. 27

Name Goods.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1		3605550	
	Inventory			1350 —	
	J.	2	3740550		
			3740550	3740550	
Jan. 1	Invt.		1350 —		1350 —
	J.	3		135 —	1215 —
8	S.			229545	
28	C.B.	6		548 45	162890
	J.	4	120899		
				347182	
	Inventory			1423 —	
			43383		
			1387372	1387372	
Jan. 29	Invt.		7423 —		

No. 28

Name Consignment

Address

DATE 190	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec 31	J.	1		6811815	
	Inventory				
	J.	2	6893315		
Jan 1	Inventory		815—		815—
4	2021#	1			
7	3712#	2			
8	C.B.	2		131025	
10	4211#	4			
14	3817#	6			
15	C.B.	4		175015	
17	3622#	9			
20	4048#	11			
22	C.B.	4		113440	
28		6		960—	433980
	J.	4	347182		
	J.	4	106513		
			535195	535195	
Jan 29	Inventory		19715		

No. 29.

Name Waste.

Address

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190 1 Dec. 31	J.	1		2312 40	
				720 —	
	J.	2	3032 40		
			3032 40	3032 40	
Jan. 1 Inventory			720 —		720 —
15	C.B.	4		30 —	690 —
				1010 —	
28	J.	4	320 —		
			1040 —	1040 —	
Jan. 29 Inventory			1010 —		1010 —

No. 30

Name Loss & Gain.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec 31	J.	2		144474 93	
				780 —	
			902 54		
			143521 39		
			152547 93	152547 93	
Jan 1	J.	3	135 —		135 —
28		4		152016	151881 16

No. 31

Name Four Weeks Loss & Gain.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Jan 28	J.	4		197050	
			45034		
			152016		

No. 32

Name Dividend.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	2		12000—	12000—
Jan. 15	C.B.	5	12000—		

No. 33

Name Undivided Profits.

Address

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1		180589	
		2		235239	

No. 34.

Name J. N. King.

Address Chicago. 24 West St.

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	1441 55		1441 55
Jan. 1	C.B.	2		321 05	
22		4		1120 50	

No. 35.

Name Small & Eustice.

Address Buffalo. 212 Lake St.

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	1214 65		1214 65
Jan. 1	C.B.	2		110 65	
8	S.		221 40		
22	C.B.	4		384 —	941 40

No. 36

Name J. J. Jenkins

Address Albany, 10 River St.

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	1658 44		1658 44
Jan. 1	C.B.	2		1314 20	
8	S.		620 10		
15	C.B.	4		344 24	620 10

No. 37

Name Reynolds & Co.

Address City, 19 John St.

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	1321 27		1321 27
Jan. 1	C.B.	2		95 27	
8				915 10	
	S.		710 07		
15	C.B.	2		308 90	712 07

No. 38

Name Wrenn & Co.

Address St. Louis, 34 George St.

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	1253 34		1253 34
Jan. 8	C.B.	2		221 —	
	J.		316 70		
15	C.B.	2		29 64	
				257 35	
22				325 —	
				420 30	316 75

No. 39

Name Rogers & Pugh.

Address New York, 217 Duane St.

DATE 190-	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
Dec. 31	J.	1	1335 45		1335 45
Jan. 1	C.B.	2		714 15	
8				300 —	
	J.		427 18		
22	C.B.	4		321 30	427 18

No. 40

Name R. M. Wilson.

Address Chicago. 31 Lake St.

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190-					
Dec. 31	J.	1		410 —	
Jan. 8	C.B.	3	410 —		

No. 41

Name J. C. Lincoln.

Address City. 214 Ridge St.

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190-					
Dec. 31	J.	1		300 —	

No. 42

Name New York Machinery Co.

Address New York. 136 Liberty St.

DATE	BOOK	FOLIO	DEBIT	CREDIT	BALANCE
190-					
Dec. 31	J.	1		615 —	
Jan. 15		3		14000 —	
			12000 —		
	C.B.	5	2000 —		

Trial Balance, Jan. 28, 190

1	Capital Stock		400000 —
2	Bills Receivable	13501 45	
3	Bills Payable		12399 65
4	Plant	107250 —	
5	Impairment & Betterments		32725 10
6	Taxes		36 67
7	Insurance	1670 —	
8	Tenant Property	10000 —	
11	Rent		210 —
12	New Building	15615 5	
13	Raw Materials	126019 2	
14	Supplies	3792 61	
15	Labor	20806 5	
16	Fuel	1371 70	
17	Interest	340	
18	Cash Discount	111 81	
19	Goods Returned & Rebates	1550	
21	C. N. Wilson, Salesman	165 —	
22	Salaries	490 —	
23	General Expenses	1070	
24	Goods in Process	3750 —	
27	Goods		16258 90
28	Consignment		4339 80
29	Waste	690 —	
30	Loss & Gain	135 —	
33	Undivided Profits		4158 28
35	Small Customers	941 40	
36	J. J. Jenkins	620 10	
37	Reynolds & Co.	712 07	
38	Wiesen & Co.	3167 5	
39	Rogers & Pugh	427 18	
41	W. C. Lincoln		300 —
42	New York Machinery Co.		615 —
	Cash	7895 91	
		1564134	1564134

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